

The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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Contents

EDITORIAL : Looking Ahead; Dr. L. V. Redman leads the A.C.S.; The Work of the F.B.I.; Another Postponed Conference	1
Physico-Chemical Processes in Colloidal Media	3
A Pioneer Plant for the Preparation of "Clean" Coal	5
The Market for Chemicals in Egypt	6
Federation of British Industries	7
Scottish Coal Tar Products in 1931	8
The German Wood Distillation Industry	9
A White Lead Prosecution	10
From Week to Week	12
Patent Literature	13
Weekly Prices and Market Reports	16
Company News	19
Commercial Intelligence	20
MONTHLY METALLURGICAL SECTION : Non-Metallic Inclusions in Steel; Vanadium from Zinc Ores; Organic Flotation Reagents; Metallurgical Topics; Some Inventions of the Month	1-6

NOTICES.—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Looking Ahead

WITH the National Government in power conditions in the chemical industry in this country are encouraging. That is the concensus of opinion expressed in the reports which we have received from firms in the industry. Towards the latter part of last year, they point out, there was a distinct revival of business which seems to have been accentuated by the suspension of the Gold Standard. The lower international value of sterling, however, did not give an immediate increase in export business, but inquiries from abroad were more numerous and gave good promise of new contracts at an early date. There is also every indication that the present year will enable manufacturers to establish markets in fields which they have not entered previously.

In anticipation of the long overdue trade revival there is a renewed demand for factory sites, as well as for existing works which can be speedily adapted to meet modern manufacturing conditions in many of the industries which are users of chemicals. Evidence is also forthcoming of a greater willingness to lay out capital for improvements in plant and equipment, for manufacturers are beginning to realise that money which is wisely spent on modern plant ultimately becomes a valuable asset. A number of British chemi-

cal works are taking up the manufacture of products which were hitherto supplied exclusively from the Continent. Others are directing their attention to the improvement of established products so that they may be in a better position to enter the world's markets. Standardisation, under the auspices of the Chemical Divisional Council of the British Standards Institution, and the admirable work of the Association of British Chemical Manufacturers and its affiliated organisations, should do much to improve methods of production as well as the quality of products. Any improvements that can be effected in these spheres are especially desirable in view of the fact that so many of the chemical-using trades are now purchasing their chemicals in accordance with standards outlined by specification. Manufacturers with flexible plant will therefore be in the most favourable position to serve industry and will secure the largest share of new business.

With Mr. J. Davidson Pratt still in office as general manager of the Association of British Chemical Manufacturers, and Dr. E. F. Armstrong as chairman of the Chemical Divisional Council of the British Standards Institution, the progressive development of these two bodies is assured. The dyestuffs industry has nothing to fear for yet another year, during which time it will continue to strengthen its position with Mr. W. J. U. Woolcock as chairman of the Dyestuffs Industry Development Committee, and should ultimately be capable of standing on its own feet. For different reasons the prospects of the fine chemical industry are more favourable than they have been for some time. The trend of events during the last two months indicate that many British consumers of fine chemicals are still unaware that suitable and adequate sources of supply exist in this country, and that in most cases where temporary exemptions have been granted from Key Industry Duty there are British manufacturers who see the possibility of making these products on a competitive basis and are speedily taking steps to do so. A wider utilisation of Empire raw materials is also in evidence, for the appearance of Empire bromine from the Dead Sea area has already placed British bromide makers in a position to be independent of the Continental bromine ring.

Dr. L. V. Redman Leads the A.C.S.

DR. L. V. REDMAN, who succeeded Professor Moses Gomberg, as president of the American Chemical Society, on January 1, has been vice-president and director of research to the Bakelite Corporation, Bloomfield, N.J., since 1912. From 1910 to 1914 he was an industrial fellow and assistant professor at Kansas, subsequently becoming president of Redmanol Chemical Products Co. He is very widely known in American chemical circles, being a recognised authority on phenol condensation products. He has also taken a very

active part in the work of the American Chemical Society and the Chemists' Club; was chairman of the New York Section of the Society of Chemical Industry in 1926; and has visited England on more than one occasion. His genial personality will go far to make him popular as the leader of the A.C.S.

The Society has elected Professor A. B. Lamb, of Harvard University, as president for 1933. Professor Lamb has been editor of the *Journal of the American Chemical Society* since 1917. In 1905-06 he was instructor in electro-chemistry at Harvard; from 1906 to 1912 he taught at New York University, where he was director of the Havemeyer Chemical Laboratory; and since 1912 he has been director of the Chemical Laboratory at Harvard University. In 1918-19 he was in the research division of the United States Chemical Warfare Service; he served on the United States Nitrogen Commission in 1919; and from 1919 to 1921 was director of the Fixed Nitrogen Research Laboratory in Washington.

The Work of the F.B.I.

ON page 7 of this issue we publish a provisional list of the new members included in the re-constituted Empire Committee of the Federation of British Industries, from which it will be noticed that several names are intimately associated with the chemical and allied trades. This is especially pleasing in view of the fact that the Federation of British Industries has always taken a leading part in any endeavours which have been made to increase co-operation between Great Britain and the countries of the Empire. For instance, in February, 1930, an extensive report on British economic policy with regard to the Dominions was prepared for the British Preparatory Committee to the Imperial Conference. In November, when the Imperial Conference failed to arrive at a satisfactory arrangement concerning the economic relations existing between the various parts of the Empire, the President announced that "as business men who realise the gravity of the position, we intend to explore the problems which face us, in consultation with our fellow industrialists of the Dominions." Acting on these words, the President, in April, 1931, personally visited Canada as the leader of a Special Mission of the Federation which went overseas to inspire goodwill and confidence between the industrialists of the two countries concerned. The time now appears to be close at hand when the policy of improvement in the economic relations of the Empire may become accomplished. This new Empire Committee will have to deal with the most important problems of national interest which the F.B.I. has ever been called upon to face, for upon the solution of these problems there depends the future prosperity of the Empire as a whole and of the United Kingdom in particular.

Another Postponed Conference

FOLLOWING on our announcement that the American Institute of Chemical Engineers have postponed their joint meeting with the British Institution of Chemical Engineers, provisionally arranged to take place in London in June, 1932, we now learn that the Council of the Institute of Metals have also found it necessary to postpone their meeting which was to have been held in

the United States and Canada during the autumn of 1932. This meeting had been planned with the close co-operation of the American Institute of Mining and Metallurgical Engineers. It is understood that the Council's suggestion has been sympathetically received in America, and the assurance has been forthcoming that members will be welcomed at any such later date as may suit their convenience.

Books Received

CHEMICAL ENGINEERING AND THERMODYNAMICS APPLIED TO THE CEMENT ROTARY KILN. By Geoffrey Martin. London: Crosby, Lockwood and Son. 31s. 6d.

The Calendar

January	4	Society of Chemical Industry (London Section) : "Recent Progress in the Chemical Study of the Vitamins." Professor J. C. Drummond. 8 p.m.	Burlington House, London.
	5	Hull Chemical and Engineering Society : Presidential Address.	Grey Street, Park Street, Hull.
	5-7	Physical and Optical Societies' Exhibition.	Imperial College, London.
	7	Society of Chemical Industry (Bristol Section) : "Electrolysis of Fused Zinc Chloride." Edgar A. Ashcroft. 7.30 p.m.	University, Bristol.
	11	Institute of Metals (Scottish Section) : "Some Properties of Fire-Bricks." H. C. Biggs. 7.30 p.m.	39, Elmbank Crescent, Glasgow.
	12	Institute of Metals (Birmingham Section) : "Stainless Steel." J. H. G. Monypenny. 7 p.m.	Chamber of Commerce, New Street, Birmingham.
	12	Institute of Metals (N.E. Coast Section) : "Defects in Non-Ferrous Castings." R. Dowson, S. G. Homfray and A. Logan. 7.30 p.m.	Armstrong College, Newcastle-on-Tyne.
	12-13	Faraday Society : General Discussion on "The Adsorption of Gases."	Oxford.
	14	Oil and Colour Chemists' Association : "Earth Colours." W. Armstrong Storey. 7.30 p.m.	30, Russell Square, London.
	14	Institute of Metals (London Section) : "X-Ray Examination of Alloys." G. D. Preston. 7.30 p.m.	83, Pall Mall, London.
	14	Institute of Chemistry (Manchester Section) : Discussion on the "Teaching of Applied Chemistry, Facilities for Specialised Post-Graduate Work." C. H. Creasey.	Manchester.
	14	Society of Chemical Industry (Yorkshire Section) and Institute of Chemistry (Leeds Section) : "Recent Developments in the Treatment of Boiler Waters." Dr. A. W. Chapman.	
	14	Society of Chemical Industry (Nottingham Section) : "Lime and Limestone." W. Woodhouse.	University College, Nottingham.
	15	Chemical Engineering Group : "Making and Breaking Emulsions." W. Clayton.	Burlington House, London.
	15	Society of Chemical Industry (Manchester Section) : "Some Aspects of Boiler Water Chemistry." H. E. Jones. 7 p.m.	17, Albert Square, Manchester.
	15	Institute of Metals (Sheffield Section) : "Stresses in Metals." A. Wragg. 7.30 p.m.	University, Sheffield.
	15	Society of Dyers and Colourists (Manchester Section) : "Beam Dyeing with Vat Colours." J. R. S. Goodall. 7 p.m.	College of Technology, Manchester.

Physico-Chemical Processes in Colloidal Media

By Ernest S. Hedges, D.Sc.

The industrial chemist has frequently to work with matter in the colloidal state. Whilst the pure chemist confines his attention mainly to highly-purified substances, having definite and reproducible physical properties, his industrial colleague is more often confronted with material in its impure and physically ill-defined raw state.

Raw material is not necessarily colloidal, but often is so, especially if of animal or vegetable origin, and many of the final products of manufacture are colloids. To mention only a few important industrial materials, cotton, paper, wool, silk, linen, leather, and rubber are in the state of colloidal gels, and whilst colloid research has been directed more towards the study of sols than of gels, the gelatinous state of colloids has the greater practical importance. From the practical point of view, the behaviour of gel towards solutions of acids, bases, and salts and their influence on the ordinary course of physical and chemical processes are features of the greatest technical interest. Two examples, the photographic industry and the tanning of leather, are sufficient to indicate the practical importance of the ready diffusion of soluble electrolytes and other compounds into gels which are immersed in their solutions.

In the early days of colloid investigation, Graham (*Liebigs Ann.*, 1862, **121**, 5, 29) noticed that crystalloids diffuse readily through gels, whilst colloids do not diffuse; his experiments led to the conclusion that a simple salt diffuses in a gelatin gel at practically the same rate as in water. Later measurements by Bechhold and Zeigler (*Z. physikal. Chem.*, 1906, **56**, 105) showed that this is correct for dilute gelatin gels, but that more concentrated gels reduce considerably the rate of diffusion of solutes.

Changes in Gelatinous Mediums

The absence of turbulence is a feature of physical and chemical changes in a gelatinous medium: diffusion in liquids is complicated by convection currents and mechanical disturbances, but the process can proceed steadily in a gel. There are, however, other complicating phenomena in gels. Different solutes affect the swelling of the gel to different extents and alter its permeability, so that in some cases the rate of diffusion may even increase with the amount which has already diffused. Further, the industrial colloids are generally highly complex substances, which cannot be regarded as chemically inert, although their chemical behaviour is not understood, and if the gel binds a certain proportion of the diffusing agent by chemical bonds the course of diffusion is necessarily altered. Adsorption and electrical changes, sometimes apparently of a specific nature, also enter.

The difference in the diffusion of crystalloids and colloids is readily demonstrated in a qualitative way by allowing sols of gelatin to set in test-tubes, so that each tube is about half full, and then pouring a coloured solution into the upper part of the tube. After several hours, solutions such as copper sulphate or potassium dichromate can be observed to have penetrated some distance through the gel, but a colloidal colouring matter such as night-blue does not penetrate the gel. It must be remembered, however, that a colloid is in equilibrium with a certain amount of molecularly dispersed material, and although in a gold sol, for example, the number of truly dissolved gold molecules may be negligibly small, the molecularly dispersed portion of some colloidal dye solutions may be relatively considerable. Generally, this "true" solubility of the colloid is exceedingly small, but when it is not too small and when the molecular weight of the dissolved portion is not too high, this portion may diffuse at an appreciable rate. More and more colloid will continue to dissolve in order to replenish that removed by diffusion, and eventually all the colloid may have diffused away in a more highly dispersed form. Thus, although the diffusion of colloids is practically negligible as such, they may in some cases diffuse by continuous transformation into the molecularly dispersed form in equilibrium with them. Such a process is necessarily slow, because the diffusing solution is very dilute, but the efficacy of certain colloidal medical preparations is probably to be ascribed to this cause. A colloid can act, therefore, as a constant reservoir of material to be had at great dilution, and this fact may be capable of important

practical developments in the future, for it offers a means for the continuous supply of an agent at low concentrations. Without the use of an enormous bulk of solution, this effect cannot be obtained in any other way.

When diffusion in gels comes to be studied quantitatively, not only have the difficulties of interpretation which have already been mentioned to be overcome, but there are also practical difficulties in the observation of the process. Even when a strongly coloured electrolyte, such as potassium dichromate, diffuses it is not possible to fix the exact boundary, for the concentration gradient falls gradually to zero and the boundary is diffuse. A sharp boundary is produced sometimes, as in the penetration of hydrochloric acid into gelatin gels, where the usual turbidity disappears and the path of the hydrochloric acid is marked by a very evident change in the refractive index of the gel. Ferric chloride and chrome alum solutions also produce a sharp boundary, but this case is complicated by hydrolysis, the metallic hydroxide being retained by the gel, whilst the free acid wanders on quickly. These systems are particularly important in the tanning industry.

Following the Progress of Diffusion

An indicator may be used to follow the progress of diffusion in gels. For example, the penetration of a sodium chloride solution into gelatin may be followed by using a gel which contains a very dilute solution of silver nitrate, so that the boundary of diffusion is marked by the formation of white silver chloride. Objections may be raised to this method, for the indicator itself diffuses in the opposite direction, some of the diffusing agent is disposed of in the chemical reaction, and the precipitate produced may obstruct the diffusion. The determination of the amount of diffusing agent in different parts of the gel, whilst giving a clear record of the course of diffusion, is, however, difficult to carry out accurately, for the end-point of volumetric reactions is usually vague in the presence of the colloid, and gravimetric methods are equally complicated by the variable ash content of the gel. Another method is to perform spot-tests on the gel with a suitable indicator to detect how far the diffusing electrolyte has penetrated.

Investigations carried out by these methods have revealed certain regularities among the many abnormalities and specific effects. The diffusion of a soluble substance from an aqueous solution into a gel or from the gel into water follows the ordinary diffusion law of Fick. When the gel already contains one electrolyte and the solution in which it is immersed contains another, both electrolytes diffuse in opposite directions in accordance with Fick's diffusion law, independently of the concentrations and osmotic pressures of the two electrolytes, provided that they do not react to form an insoluble substance. Even if they do react, but incompletely, as in the case of magnesium chloride and ammonia, some of the electrolyte originally in the gel will be found in the outer liquid and some of that in the liquid will be found in the gel. When the two electrolytes react chemically to produce a precipitate which is not soluble in excess of either reagent, diffusion becomes a one-sided process and the solution of higher osmotic pressure diffuses into that of lower osmotic pressure. This one-way feature of diffusion in these circumstances is known as Pringsheim's Rule (*Jahrb. wiss. Bot.*, 1895, **23**, 1).

Crystallisation and Precipitation

The formation of a new solid phase from a liquid phase has received considerable investigation, particularly at the hands of Tamman (*Kristallisieren und Schmelzen*, Leipzig, 1903). The fundamental facts are that the process must be differentiated into two parts: the formation of crystallisation nuclei and the growth of the nuclei. The first part of the process is the union of groups of molecules to form centres of crystallisation, and the second part is the growth of these nuclei at the expense of the dissolved material. If the rate

of formation of nuclei is small and the rate of crystallisation great, a few large crystals will be formed, but if nuclei are formed rapidly and the rate of growth of the crystals is low a large number of small crystals will be produced. Thus, a given mass of matter may consist of a large number of small particles or a small number of large particles, according to the relative rates of formation of nuclei and growth of nuclear crystals. The presence of a gel modifies these and other factors. Convection and mechanical disturbances are ruled out and fresh solute can reach the growing crystals only by diffusion, and except in dilute gels this is a slower process than in water as a medium. The more slowly a crystal grows the more perfect is its form and if the diffusion factor were the only one concerned, extremely well-developed, large crystals would be expected to be formed in gels. This is often the case in practice and reference may be made to the large crystals of thallium halides in gelatin jellies made by Hausmann (*Z. anorg. Chem.*, 1904, **40**, 110) and the large crystals of gold made by Hatschek and Simon (*Kolloid-Z.*, 1912, **10**, 265) by reducing gold chloride in a gel of silicic acid.

Actually, there are other factors, which cannot always be anticipated. Whilst a diminution of the rate of growth of single crystals tends towards the production of large specimens, provided the rate of formation of fresh nuclei is small, the same cause will favour the production of a mass of small crystals if the rate of formation of nuclei is great, because fresh nuclei will be forming while the existing nuclei are slowly growing. Further, the gel may affect the formation of nuclei. If the formation of a crystal nucleus depends on the probability of a group of molecules being arranged in a manner roughly conforming to the space-lattice, then the presence of a colloid may be expected to diminish the probability. In that case, large crystals would again be favoured, and it is possible that the apparently higher solubility of certain compounds in gels than in water (compare Hedges, *J. Chem. Soc.*, 1929, 2779) may be ascribed to a supersaturation due to this cause. On the other hand, the gel itself may be able to provide nuclei for the material. The protective effect of the colloid also tends to produce a small particle size. A gelatin gel may be expected to protect the particles of a precipitate in the same way that it protects a gold sol, and for this reason precipitates formed in gelatin are often of colloidal dimensions. As a rule, silicic acid gel, which has no protective effect, leads to the formation of much larger crystals than are formed in gelatin. The general result depends, therefore, on which of a number of opposing effects are the strongest.

A mass of precipitate of small particle size in a gel frequently undergoes a process of "ripening," or growth of the large particles at the expense of the smaller. This process is important in photographic films. The gel also has a tendency to modify crystalline habit. Sometimes the growth of certain faces is retarded more than that of others, but often there is a tendency to form spherulites. The tendency towards rounded contours is reflected in the arborescent forms of crystals often observed.

Chemical Reactions between Electrolyte and Colloid

When colloidal materials are treated with various electrolyte solutions in technical operations, some chemical reaction usually occurs between the electrolyte used for the treatment and the colloid itself, or the electrolyte may react with other electrolytes already present in the colloidal gel. Precipitation occurring in gelatinous media is ideal in the sense that the particles of precipitate remain where they are formed and the reactants reach each other solely by diffusion. It is not easy to be sure whether the gel modifies the ordinary course of the reaction or whether it reveals the true course of the reaction, which is ordinarily obscured by the turbulence of the mixed solutions. In the latter case, the study of chemical reactions in gels becomes a matter of fundamental theoretical importance, but it is in any case a subject of great interest and practical importance, because chemical reactions in biological structures, whether living or dead, will normally be of this type. These reactions are usually studied in the laboratory by preparing a sol of 10 per cent. gelatin or other suitable colloid, mixing it with an equal volume of dilute solution of one of the reactants, pouring the mixture into a series of test-tubes so that they are about half full, allowing

it to set to a gel and then pouring a more concentrated solution of the other reactant into the upper part of each test-tube.

The important feature of the precipitate which forms in the gel is that it has a definite structure. In general, four types of structure may be produced: continuous, discrete, cellular, and periodic. The latter two, in particular, are of the greatest biological interest. Precipitates of *continuous structure* consist of small particles uniformly distributed so that the whole mass appears homogeneous to the eye. They are usually formed when the precipitate is a very insoluble substance, such as barium sulphate or silver chloride. Examined under sufficiently high magnification, apparently continuous structures may sometimes be recognised as cellular or periodic in reality. *Discrete structures* consist of particles of relatively large size separated by considerable spaces and may contain well-formed crystals. They are more common in gels which have a low protective power. *Cellular structures* consist of a network of honeycomb-like cells of precipitate enclosing the clear gel. They are frequently obtained with a large number of precipitates and in many gels, especially when the reacting solutions are dilute. Some examples have been discussed by Copisarow (*Kolloid-Z.*, 1928, **44**, 319). Periodic structures contain definite bands or rings of the precipitate separated by relatively clear spaces, which may contain the precipitate as a discrete structure. These periodic structures have aroused very widespread interest and have received a considerable amount of investigation.

American Chemical Society

Election of President and Directors

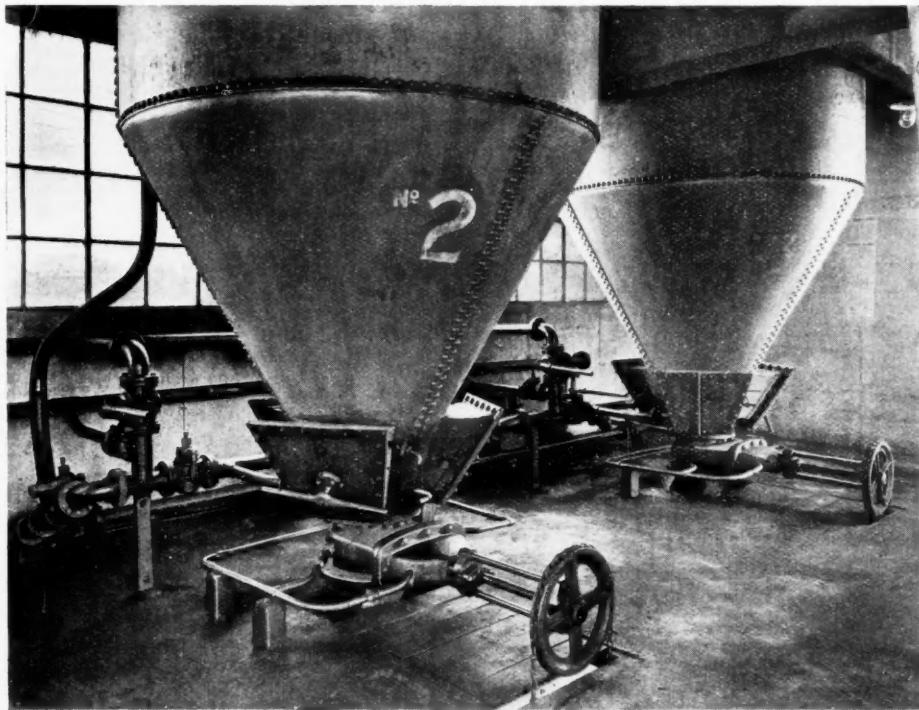
THE election of Professor A. B. Lamb, of Harvard University, as president of the American Chemical Society for 1933 is announced. The president for 1932 is Dr. L. V. Redman, vice-president and director of research of the Bakelite Corporation, Bloomfield, N.J., who succeeded Professor Moses Gomberg, of the University of Michigan, on January 1.

The following directors have been elected: Mr. E. M. Billings, Eastman Kodak Co., Rochester, N.Y., for the second district, comprising the States of New York and New Jersey; Professor Roger Adams, University of Illinois, Urbana, for the fifth district, which includes Illinois, Indiana, Michigan, and Wisconsin. Mr. R. E. Wilson, who is in charge of the Development and Patent Department of the Standard Oil Co., of Indiana, Chicago, was named "director at large." Dr. G. J. Esselen, Boston; Professor R. A. Gortner, University of Minnesota; Professor E. E. Reid, Johns Hopkins University, and Dr. E. R. Weidlein, director of Mellon Institute of Industrial Research, Pittsburgh, have been chosen as "councillors at large."

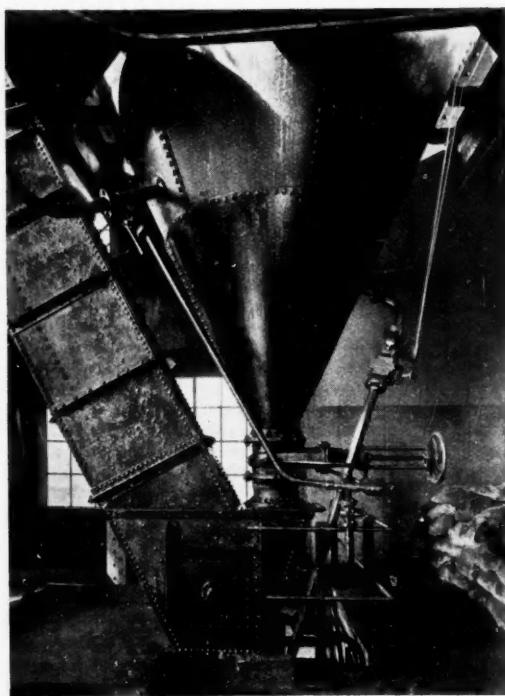
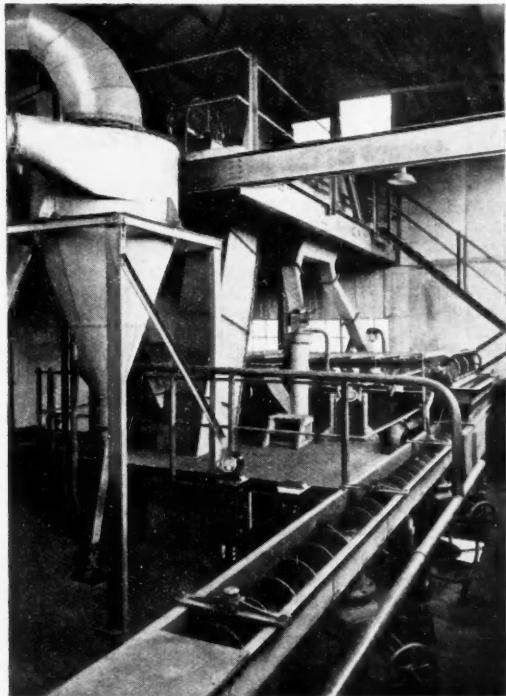
Lautaro Nitrate Report

Loss of £650,000

THE accounts of the Lautaro Nitrate Company for the year ended June 30 last show a net loss of £656,511, compared with a net profit of £32,543 for 1929-30. The company is now a subsidiary of Compania de Salitre de Chile ("Cosach") which was organised in March last to coordinate the whole of the Chilean nitrate industry under one control. Against the loss for the year under review a net credit balance of £320,356 was brought forward, leaving a debit balance of £336,155 to be carried forward. Preferred share dividends, which are cumulative, amounting to £560,000, have not been paid. The directors state that practically all the difference between the loss now reported and the small profit of the preceding year is accounted for by the depressed condition of the nitrogen industry, resulting in a smaller volume of sales and lower prices of nitrate, and by smaller volume of iodine sales. Nitrate stocks of the company at June 30 totalled 548,271 metric tons (against 592,903 metric tons a year previously), of which 531,807 tons was Shanks nitrate and 16,374 tons grained nitrate. The total quantity of nitrate produced was 367,606 metric tons, of which all except 16,373 tons was Shanks nitrate. There are at present three plants in production. One of these is the new "Pedro de Valdivia" plant, which produces grained nitrate. This plant is in the Tocopilla "pampa" and its construction was practically completed in May last. Production was begun on June 6 and has been continued without interruption.



BOTTOM OF CLEAN COAL DRAINERS.

BASE OF CALCIUM CHLORIDE GRAVITY SEPARATOR
WITH ELEVATOR FOR THE HIGH-ASH REFUSE.PORTION OF TOP OF DE-DUSTING PLANT AND
GRAVITY SEPARATOR.

A Pioneer Plant for the Preparation of "Clean" Coal.

(Reproduced by courtesy of *The Clean Coal Co., Ltd.*)

The Market for Chemicals in Egypt

Good Prospects for Dyestuffs and Fertilisers

The following extracts are taken from a Report on Present Economic Conditions in Egypt which has been prepared by Mr. R. M. A. E. Turner, Commercial Secretary to the Department of Overseas Trade in Cairo. The complete Report is published by H. M. Stationery Office, price 4s. net.

In considering the highly competitive nature of the Egyptian market it must be borne in mind that, despite its population of some 14,500,000 people and the very great progress made of recent years in various directions, there are probably only some 2,000,000 people in the country who are potential customers for the large number of western manufactured products. (The fellah, of course, requires cotton for his clothing, fertilisers for his fields, and is either directly or indirectly a consumer of various petroleum products, but beyond these his requirements of western products are very small, and in the present economic crisis his consumption is reduced to a minimum.) Of the section of the community who do buy western manufactured articles the wealthier probably disburse the greater amount of their yearly expenditure abroad, buying only their more day-to-day requirements from local establishments. Of the remainder, considerable sections are, at any rate to some extent, influenced by their national feeling or their upbringing, and it is only in the case of a comparatively small minority that such bias is in favour of British goods.

The reputation of British goods for high quality is still generally accepted as almost axiomatic, but, like many axioms, is not necessarily accepted by the individual in his private life unless it is brought forcibly home to him. Much has been said, and said repeatedly, of the value of visits to their foreign markets by British manufacturers, but it would be well that the advertisement value of such visits should not be overlooked. In cases which are known where British directors or managers have visited Egypt and made the personal acquaintance of their customers, a tangible benefit has nearly always resulted. The mere fact that the maker of a certain article has been to visit him, if it does nothing else—and it almost invariably results in an order, even though it be a small trial order—serves to impress on the mind of the customer that manufacturer's name. It is difficult to over-estimate the advantage which the manufacturer himself obtains from the knowledge that such a visit gives him of the actual requirements of the market, of the nature of the competition his goods have to meet, and of the mentality and methods of business of the customers with whom his local agent has to deal, and of the public who are the actual consumers of the goods. That such a visit cannot but have directly advantageous results on the relations between the manufacturer and his agent is manifest. The purely human side of the value of such visits must also be remembered. To give a remarkable, though negative, example it may be mentioned that not so very long ago a British manufacturer happened to be in Cairo on a holiday. A local merchant with whom that manufacturer had for a long time done business running into thousands of pounds a year, happened to hear of his presence in the capital. The British manufacturer, however, took no trouble to call on his customer, with the result that the local merchant, offended, decided to place his orders for that particular line of commodities with a competing foreign firm.

Increased Trade in Dyestuffs

Coal tar dyes have in Egypt, as in other countries, almost completely replaced the natural dyes, and the latter are used only in very limited quantities for better class work. Synthetic indigo was first introduced into Egypt about 40 years ago by two German factories which regularly sent their chemists to Egypt, and every little village of the country was for years systematically canvassed. Thus the local industry was developed with petty dyeworks all over the country, which formed and still form a regular clientele for dyes and indigo of various strengths. Before the war imports of coal tar dyes and synthetic indigo amounted to over £E. 100,000 per annum. Since the war, however, the import of ready dyed cotton and silk materials has materially affected the primitive dye industry in Egypt, as cheap ready made cloth is available, and trade in locally dyed material has thereby lost ground.

In 1926 the main German dyestuff producers amalgamated and established their own office in Cairo. The following year the French producers joined the merger and in 1928 a *de facto* sales control over Swiss dyestuff production was attained by the combine. Italian producers have an agreement with a Paris firm, controlled by the German combine, and have abandoned the Egyptian market for indigo, but are still selling dyestuffs. In 1929, therefore, the German combine had full control of the dyestuff trade in Egypt and commenced increasing prices. The same year a British concern established a branch office in Cairo and commenced supplying dyes and indigo, and during 1930 the British range of dyes was introduced all over the country. In 1929 Parliament granted a considerable amount for the erection of model dye works in Cairo. A British expert is in charge and the work controlled by the Department of Commerce and Industry.

Branded Pharmaceuticals and Drugs

The merchant problem of the local druggist and pharmacist in Egypt, whether wholesaler or retailer, is unique. He must carry the specialities of every principal export country. The drug trade in Egypt is well organised considering local conditions, but is insufficiently organised in order to carry on an indent business with foreign suppliers. Briefly, the manufacturer of branded specialities who relies on direct shipment to dealers must expect moments of shortage of goods in the country, and at other times over-stocking with consequent price-cutting. No agent should be permitted to make his own prices to the trade without control by the manufacturer, as profiteering is likely to result. The minimum merchandise profit on which an agent can operate successfully is 10 per cent. on gross sales; this profit should be based on sales price, and not on cost. The maximum should never be more than 12 per cent. Price is distinctly a factor of unbranded chemicals and drugs. In only one or two instances is a manufacturer's name sufficiently a guide to high quality to overcome price competition. It is wisest to sell to a few of the most reliable wholesale druggists and large retailers of firm orders on a basis of price in vogue the day of shipment. Continental competition is exceedingly severe, but British chemicals have given satisfaction and in a number of instances are demanded by dealers.

Heavy Industrial Chemicals

The most important item among the heavy chemicals is caustic soda. A local company are large manufacturers of this product, and it is believed that their production is about 3,000 tons per annum. This company exports its products to adjacent countries, such as Greece and Turkey. The imports of British heavy chemicals are on the increase. This is due largely to the fact that a British chemical concern has entered energetically the Egyptian market through its own direct selling offices in Cairo and Alexandria, where stocks are carried and the requirements of the market closely followed.

Chemical Fertilisers

Egypt has been for the last thirty years a market for chemical fertilisers. Of the three main nutritive elements for plants, namely, nitrogen, potash and phosphoric acid, the two latter are not nearly so important to Egyptian agriculture as the former. The potash imported into Egypt arrives in the form of sulphate of potash from the German Kalisindikat, and the phosphoric acid arrives generally in superphosphates, chiefly from Belgium, Holland, France and Greece. The imported nitrogenous fertilisers are Chilean nitrate of soda, German (and Norwegian) nitrate of lime, British nitro-chalk, sulphate of ammonia from various sources and a quantity of other synthetic products of less importance to the Egyptian market (cyanamide of lime, etc.). The following figures give quantities imported since 1920:—

Year	Nitrate of Soda tons	Nitrate of Lime tons	Nitro Chalk tons	Sulph. of Ammonia tons
1920	98,889	—	—	3,431
1921	35,157	3,155	—	1,764
1922	97,350	7,597	—	2,758
1923	70,315	3,943	—	4,660
1924	121,835	7,956	—	4,955
1925	173,764	14,494	—	9,505
1926	172,849	25,236	—	3,453
1927	142,299	33,510	—	2,952
1928	188,077	39,886	—	4,480
1929	193,125	64,795	2,055	2,590
1930	170,050	74,302	5,184	2,746

The fertiliser universally used in Egypt is still the Chilean nitrate of soda. Owing to the attitude of the Egyptian agriculturist, who is probably more conservative than agriculturists in most other countries, nitrate of soda has held its ground in Egypt in spite of very keen competition from the synthetic products which, although, it is contended, of equal efficiency, are being offered at considerably lower prices and with many facilities by way of credit, etc. The agriculturist in Egypt has hardly any founded opinion on the merits of the various kinds of nitrogenous fertilisers and the popularity of Chilean nitrate of soda is mainly due to tradition. Sulphate of ammonia is still comparatively unknown, although for years it has given quite as good results per unit of nitrogen as the nitrate of soda for most of important crops in Egypt, and it has been considerably cheaper per unit of nitrogen than the nitrates. Originally this was no doubt due to the fact that sulphate of ammonia producers did not whole-heartedly attack the Egyptian market, and their task is now a more difficult one as sulphate of ammonia has in consequence fallen into discredit. Another reason why the agriculturist does not so readily adopt sulphate of ammonia is that its action is slower, and the fellah of Egypt is apt to judge by the early evidence of effect.

Chilean nitrate of soda was the sole prevailing nitrate on the Egyptian market until 1921 when the synthetic nitrates were introduced. Nitrate of soda was sold on a cash basis and owing to its popularity is generally speaking still a cash commodity. The chief distributor until about 1924 was the Royal Agricultural Society (a unique kind of agricultural co-operative society) and two or three importers who did quite good business, either in selling from own depots up country or through local merchants.

Undercutting in Nitrate of Soda

To-day the Ministry of Agriculture are the chief distributors of fertilisers and will no doubt continue so for years to come, as they enjoy the privilege of encashing by the tax collectors, and are alone entitled to seize property of less than 5 feddans (acres) for covering of debts. The Ministry of Agriculture are now confining themselves to strict business considerations and buy such fertilisers only as are in demand. The Chilean Nitrate Producers' Association of Valparaiso (now Compagnia Salitrera de Chile) last year established offices in Alexandria and Cairo for propaganda and sales of Chilean nitrate (they previously only had a technical service in this country), and these offices are selling direct to consumers opening up stores up-country. Chile no longer depends on outsiders for maintaining this important market.

Granulated nitrate of soda (Guggenheim system) is imported and sold in special 50 kilo single bags, bearing "The Champion" (Bull-dog brand). The ordinary nitrate of soda is sold in 100 kilos double bags regulated at time of despatching up-country, as the goods arrive in single original bags, the weight of which varies from 97 kilos to 102 kilos, and the law on fertilisers requires that nitrate of soda should be sold in regulated bags of 100 kilos gross. The Association have thus entered into direct competition with the late importers of nitrate of soda, now wholesale merchants, and also the Royal Agricultural Society, who have had for many years their depots up-country. The result is that in one village one can find the Ministry of Agriculture's depot (where fertilisers are sold on easy payment terms), that of the Royal Agricultural Society and those, sometimes three or four in number, of the wholesale merchants. The result of this is, of course, that the various agents, in order to push

business, are under-cutting prices or abandoning part of their commission, thus leaving practically no profit to anybody.

Nitro Chalk

Nitro-chalk from the United Kingdom was first introduced in Egypt in 1929. It has already proved a worthy challenger and agriculturists are generally very satisfied. It is chiefly sold on credit, mostly through local dealers (concessionaires) and occasionally direct to consumers. The Royal Agricultural Society is selling nitro-chalk from its stores up-country. It has been found advisable to sell through local dealers, as only when a fertiliser has become known to the agriculturists (as in the case with nitrate of soda) will they make special efforts to get it. For some years to come sellers of nitro-chalk will presumably have to search out the consumers. Norwegian nitrate of lime is now in the hands of the German chemical combine, and is now manufactured on the German process, i.e. at 15.50 per cent. nitrogen instead of 30 per cent. French nitrate of lime, since the conference in June last of the Continental manufacturers, is no more imported into Egypt. Cyanamide of lime and sulphate of potash make little if any progress. Superphosphate of lime, 16-18 per cent., has been less imported, owing to the economic position.

Interest has re-awakened in the proposal to manufacture sulphuric acid and superphosphates in the country, using for the latter purpose the phosphates mined on the Red Sea coast. A strong local group is investigating the possibilities, and it is stated that the Government regards the proposal with benevolent eyes.

Federation of British Industries

Empire Committee Re-constituted

The Empire Committee of the Federation of British Industries has been re-constituted under the Chairmanship of Sir Arthur Duckham, President elect of the F.B.I. The provisional list of members includes:—Mr. Douglas T. Anstruther (Jas. Williamson & Son), Rt. Hon. Lord Barnby (Past President, F.B.I.), Mr. Frank A. Beane (Chief General Manager, Lloyds Bank, Ltd.), Mr. D. A. Bremner (British Engineers' Association), Mr. Edgar P. Chance (Chance & Hunt, Ltd.), Mr. E. C. Clark (Broughton Copper Co., Ltd.), Mr. N. R. Crute (Associated Lead Manufacturers), Sir Arthur Duckham (Deputy President, F.B.I.), Colonel F. Garrett (Agricultural & General Engineers), Colonel A. Hacking (Society of Motor Manufacturers and Traders Ltd.), Sir Hugo Hirst, Bart. (Chairman, General Electric Co., Ltd.), Sir Edgar R. Jones (South Wales Tinplate Corporation), Major C. J. Kavanagh (British Steel Works' Association), Mr. H. W. Lee (Chairman, Fine Cotton Spinners' & Doublers' Association), Major Sir E. Humphrey M. Leggett (Chairman, British East Africa Corporation, Ltd.), Mr. G. H. Locock (Federation of British Industries), Mr. Peter Macgregor (Sanderson Bros., & Newbould, Ltd.), Mr. Moir Mackenzie (Federation of British Industries), Mr. James A. Main (A. & J. Main & Co., Ltd.), Mr. Joseph Maudslay (Agricultural & General Engineers, Ltd.), Mr. George H. Corbet-Milward (Henry Milward & Sons, Ltd.), Mr. Charles Mitchell (Chairman, Dorman, Long & Co., Ltd.), Mr. T. Nightingale (Sheffield Steel Products), Sir Roland Nugent (Federation of British Industries), Mr. Julian Piggott (British Steel Export Association), Mr. J. Davidson Pratt (Association of British Chemical Manufacturers), Sir Gervais Rentoul (British Ironfounders' Association), Mr. I. V. Robinson (British Electrical & Allied Manufacturers' Association, Inc.), Dr. Snow (United Farmers' Federation), Mr. David Spence (Robert Bowran & Co., Ltd.), Mr. T. H. Thatcher (Atlas Preservative Co., Ltd.), Sir Alexander Walker (Chairman, John Walker & Sons, Ltd.), Mr. E. T. Walker (Wolsey, Ltd.), Major H. R. Watling (British Cycle & Motor Cycle Manufacturers' and Traders' Union, Ltd.), Mr. Edward Wilshaw (Imperial & International Communications, Ltd.) and Mr. W. J. U. Woolcock (Mond Staffordshire Refining Co., Ltd., representing Imperial Chemical Industries, Ltd.).

The terms of reference of the Committee are (1) to carry out a continuing study of Empire Trade problems, and to encourage joint action on the part of industries with regard to Empire Trade; (2) to prepare for the next Imperial Conference; (3) to examine how far co-ordination can be secured in the Empire trade activities of this country.

Scottish Coal Tar Products During 1931

By our Scottish Correspondent

The following article was omitted from our Annual Review, December 26, but is here included to complete the scope of the surveys which were published in that issue.

BUT for the fall in sterling during September, the year 1931 would have been remembered as one of the poorest on record. Stocks at the beginning of the year were unusually high owing to the 1930 depression and distillers were only too glad to sell their products at any price which was offered. Accordingly values fell steadily until lower prices than have existed since pre-war days were being accepted for many products. Meantime production continued as the various gas works had, of course, to dispose of their crude tar and distillers had to accept owing to long term contracts, so stocks accumulated to such an extent that storage accommodation became a problem. At this stage distillers were very reluctantly compelled to continue distillation to pitch so as to reduce the production of liquid products and this meant that creosote oil became abundant. Fortunately, owing to the fact that blast furnace oil was not being made, there was a better demand for ordinary creosote and to a certain extent this eased the position. As stated it was with considerable reluctance that pitch was produced as no outlet was apparent for this at the time and distillers were looking to the road authorities to relieve their position by using plentiful supplies of road tar. Practically any price for tar was accepted so that in June, at the so called height of the season, value at works was as low as 2½d. per gallon. As the season progressed, however, it became apparent that distillers had been too pessimistic and that the demand was sufficient to take care of production. In addition weather conditions improved towards the end of the season so that road work was continued beyond the usual period and accordingly values appreciated quite considerably.

When this country came off the gold standard and the value of sterling decreased in terms of foreign currency a sudden rush of orders was experienced particularly from the near continent, so that the pitch, which had been produced as a last resort during the early part of the year, was easily disposed of at prices which increased each week at a surprising rate until stocks were reduced to practically nil. It will be seen, therefore, that the last quarter of the year helped to make up to the distillers what had been lost during the first three quarters. Now supplies are scarce with prices firm and, despite the possibility of increased production of crude tar (consequent upon the possibility of duties becoming applicable to help the heavy industries), prospects for 1932 are brighter. It is anticipated that prices will be maintained at not under present level and many buyers are endeavouring to cover themselves for forward delivery.

Cresylic Acid

The demand for this commodity has been very poor all year and even during the September-December quarter, when most by-products improved, tar acids remained unchanged with abundant stocks available. The value of Pale 97/99 per cent. quality at the beginning of the year was 1s. 6d. to 1s. 7d. per gallon but gradually fell until the price is now only maintained with difficulty at about 1s. 2d. to 1s. 3d. per gallon. High boiling tar acid however, was on short supply with the result that price, which had remained at round 1s. 7d. to 1s. 10d. per gallon during January-June, increased rapidly to its present level of 2s. 6d. to 3s. per gallon. No downward change is anticipated in high boiling acid as the oils from which these acids are mainly produced are not plentiful and are not likely to be until the blast furnaces are again in operation.

Carbolic Sixties

The year commenced with value steady at about 1s. 8d. to 1s. 10d. per gallon for grades containing under 1 per cent. of water but no demand made itself felt and accordingly quotations gradually fell to round 1s. 2d. to 1s. 4d. per gallon in September. Many makers refused to sell at this level, however, and as it turned out they were wise to do so as prices rose again consequent upon an increased demand due to the fall of the pound. To-day supplies are not too

plentiful and value is about 1s. 7d. to 1s. 8d. per gallon for best grades.

Creosote Oil

The outlet for this oil remains strictly limited as no new uses have been found which are practicable. Fortunately production in Scotland was somewhat below the average so that throughout the year values were fairly constant. Gas works straight run oils were selling in January at 3d. to 3½d. per gallon according to quality and district and now, owing to this being the season when gas works concentrate on the storing of their crude tar and thus no oil is being produced, value is higher at 3½d. to 3¾d. per gallon.

Coal Tar and Blast Furnace Pitch

As a general rule distillers in Scotland only make small quantities of this to cope with local requirements as they find it more profitable to produce refined tar for road making. This year, however, owing to enormous stocks of tar on hand, pitch had to be made during January-June when there was no hope of selling. In September, however, Continental business came away and within a very short time stocks were reduced to practically nil. Price fell from 42s. 6d. to 45s. per ton in January to about 37s. 6d. per ton at the beginning of June. Thereafter a slight improvement took place but it was during the last quarter of the year that value increased rapidly from 42s. 6d. per ton to current level of about 60s. per ton f.o.b. Glasgow. At present there are not sufficient supplies in Scotland to conduct export business.

The home consumption of this grade of pitch has remained fairly steady throughout the year and prices were fixed at 30s. per ton f.o.r. works for home trade, and 35s. per ton f.a.s. Glasgow for export, until October when the ironmasters increased controlled price in sympathy with coal tar quality until now it stands at 40s. per ton f.o.r. works for home trade, and 45s. per ton f.a.s. Glasgow for export.

Refined Coal Tar

Despite the fact that it was anticipated all round that the year 1931 would be a good one from the tar distillers' point of view, there was considerable anxiety on the part of distillers as they were holding large stocks carried forward from the previous year. It was not difficult, therefore, for prices to be forced down, particularly for large County Council contracts. Accordingly value fell from 3d. in January to 2½d. in June-July. When stocks began to fall, however, values regained part of the loss but it was only when the weather remained exceptionally good towards the end of the summer that the real value was received for this product. August saw quotations at 2½d. per gallon but two months later price was between 3d. and 3½d. per gallon and now offers are difficult to secure even at to-day's value of 4d. per gallon.

Very little trading was arranged in blast furnace tar as, with only one company producing during the first half of the year, supplies were limited. Price was fixed at 2½d. per gallon for available supplies.

Crude Naphtha and Water White Products

Very little of this is available for outsiders as most of the producers make refined qualities. Nevertheless during the year more plentiful supplies were available as in some cases the crude could be disposed of when refined qualities had no outlet. Price remained practically the same throughout the year, viz., 4d. to 5d. per gallon according to quality, quantity and district. Distillers of water white products have had a great deal of difficulty in finding a suitable outlet for their solvents. The local demand is totally inadequate to look after production and the quality is not such that it can compete in England. Stocks have been high all year with prices irregular. 90/160 Solvent remained at round 1s. 2d. to 1s. 3d. per gallon all year with 90/190 Heavy Solvent about 2d. per gallon lower. Motor benzole, in sympathy with petrol, fluctuated between 1s. 4d. per gallon in January and about 1s. 5d. per gallon in June. The value is now easy at about 1s. 3½d. per gallon in bulk quantities.

The German Wood-Distillation Industry

By Robert A. Lord

The following article is reprinted from the current issue of "Commerce Reports," which is published by the United States Department of Commerce. It is based on information supplied by the U.S. Consul General at Frankfurt and the U.S. Trade Commissioner at Berlin.

THE German wood-distillation industry is represented mainly by two large concerns, the Holzverkühlungsindustrie A.G., of Constanze, and the Verein für Chemische Industrie A.G., of Frankfurt-on-the-Main. Both concerns have developed to their present magnitude through mergers and absorption of numerous smaller works, some of which still exist as constituent plants. The parent concerns, in turn, have constituted part of a concentration movement of still greater proportions, involving a good part of the German chemical industry and effecting an alliance between wood-distillation manufacturers and those of corresponding synthetic products.

Present Production below Pre-war Level

It appears certain that a substantial shrinkage has occurred in the output of the wood-distillation industry, especially in acetic acid, methanol, and acetone, owing to competition from the synthetic products. In 1913 about 66,000 metric tons of charcoal, 18,000 of acetate of lime, 2,700 of acetic acid, and 3,600 of methanol were produced. The present wood-distillation production is estimated by representatives of the industry at about 80 per cent. of pre-war output. Acetone formerly was manufactured chiefly from acetate of lime. The present German output represents chiefly the synthetic product. The synthetic production of methanol exceeds that from destructive distillation of wood. The German denaturation formula for industrial alcohol requires four parts methanol and one part pyridine bases, and furnishes an important outlet for methanol of the denaturing grade. Practically the only two forms of formaldehyde found in trade are 30 per cent. and 40 per cent. solution. The Hoechst Werke of the I. G. Farbenindustrie market their 40 per cent. solution under the trade name of "Formol." A similar product is marketed by the Schering-Kahlbaum A.G. Berlin, as "Formalin." The formaldehyde solution of the German Pharmacopoeia requires 35 per cent. formaldehyde.

Wood tar is the least valuable of the products of wood distillation. Most of the output is burned as a fuel at the producing plant. A certain percentage is sold as tar but only a very small quantity is used for the manufacture of creosote, guaiacol, and other by-products, the market for which is comparatively limited. Outside of the two wood-distillation concerns, acetic acid is produced synthetically by the I. G. Farbenindustrie (Hoechst) and Dr. Alexander Wacker Gesellschaft, of Munich, also controlled by the I.G.

Products distributed through Specialised Organisations

Many of the German wood-distillation products are sold through joint sales organisations or syndicates, which, as a rule, handle only one product. The Holzkohlen-Verkaufsstelle G.m.b.H., at Frankfurt A. Main, handles charcoal; the Essigsäure G.m.b.H., Frankfurt A. Main is the syndicate for acetic acid; the Deutsche Azeton-Konvention distributes acetone; the Essigsäure-Anhydrid-Konvention is an organisation for the sale of acetic anhydride; and methanol is distributed by the Deutsche Holzgeist-Konvention. The three last-named products also are controlled by international syndicates. Products which are not controlled by syndicates are sold through ordinary channels, either direct from the factory or through representatives at home and abroad.

Domestic sales compared with pre-War volume may be summarised as follows: Methanol and methanol denaturant have increased greatly; Solvents for lacquers and artificial leather have increased 200 per cent.; formaldehyde is consumed in approximately the same volume, at present finding its chief market as a raw material in the manufacture of synthetic resins and plastics; while acetone has shown a marked upward trend. Acetone is now being consumed in the rayon industry as well as in the storing of acetylene gas. Sales of wood-distillation acetic acid show a recession as compared with pre-War, although the synthetic production

has increased fourfold. Acetic acid has an important outlet in the rayon industry. Sales of ethyl acetate are expanding steadily. Charcoal trade is retarded although competition from the Czechoslovak and Polish product has been checked somewhat. These countries also supply at competitive prices fusel oil, amyl, butyl, and propyl alcohols. Sales of wood tar are believed to be at about the same level as before the war.

Competition with United States for European Market

The development of the German foreign trade in wood-distillation products has been marked by severe competition with American trade in Europe. The union of the German wood-distillation industry with synthetic methanol manufacturers strengthened the position of the German European trade.

In calcium acetate competition with the United States and Canada is an important factor. Imports in 1930 amounted to 5,812 metric tons, valued at 1,175,000 marks—an increase from 3,807 metric tons, valued at 872,000 marks, in 1929. Czechoslovakia and Rumania account for over 90 per cent. of the total German imports of calcium acetate. During the first nine months of 1931 imports amounted to 2,494 tons. Exports of this product are shown in combination with certain other acetates and acetone. Shipments of the group in 1930 totalled 4,637 tons, valued at 3,656,000 marks, and in the first three quarters of 1931, 1,872 tons, destined in small quantities to many countries but led by Soviet Russia, the United States, the Netherlands, Poland, Great Britain, and Italy.

Exports of Wood-distillation Products

German imports of acetic acid are insignificant. Exports in 1930 decreased 40 per cent. by volume and almost 50 per cent. by value, to 6,074 tons, valued at 3,997,000 marks, compared with 10,617 tons, worth 7,423,000 marks, in 1929. Exports continued to decline during the first three quarters of the current year, 3,518 tons being shipped against 4,981 in the corresponding 1929 period. By far the most important German market for acetic acid and anhydride is Great Britain.

Official foreign trade statistics for methanol, acetone, and formaldehyde are grouped, and, as in the case of acetic acid, no data are available to indicate the proportion of synthetic and natural products. During the past few years exports of the group have increased steadily, reaching a peak of 16,038 metric tons, valued at 12,881,000 marks, in 1929. In 1930 shipments fell to 9,357 tons, worth 7,640,000 marks, but during the first nine months of 1931 increased to 9,107 tons from 7,997 in the 1930 nine-month period. Great Britain, Japan, Switzerland, and Russia are leading markets. Imports of this group, chiefly from Czechoslovakia and Yugoslavia, amounted to 116 tons in 1929, 517 in 1930, 419 in the first three quarters of 1930, and 169 in the first three quarters of 1931. Imports of crude methanol, chiefly from Czechoslovakia, were practically stationary in 1929 and 1930 at about 3,500 tons and in the first three quarters of 1930 and 1931 at about 1,400 tons. Exports of crude methanol and acetone have declined, 917 tons being shipped in 1929, 274 in 1930, and 127 in the first three quarters of 1931.

Wood tar is not listed separately in export statistics while foreign trade in wood-tar oils is insignificant. Pitch from lignite wood and all other sources except coal is imported to an amount of almost 3,500 tons annually, although exports exceeded this figure by 1,000 tons in 1930.

Phloroglucine and Key Industries Duty

THE Treasury have made an Order under Section 10 (5) of the Finance Act, 1926, exempting phloroglucine from Key Industry Duty from December 24, 1931, until December 31, 1932.

A White Lead Prosecution

Alleged Infringement of Merchandise Marks Act

BEFORE the Recorder, Sir Ernest Wild, K.C., at the Central Criminal Court, London, on Friday, December 18, the hearing was commenced of the case against Richard Hunecke (54), a shipping agent of Hull, who was indicted for selling a quantity of pigment to which a false trade description was applied. He pleaded not guilty.

Mr. L. A. Byrne appeared for the prosecution, whilst the defendant was represented by Sir Arthur Colefax, K.C., Mr. H. H. Weingott and Mr. J. L. Gamgee.

Mr. Byrne said that what the Jury had to decide was whether there had been an infringement of the Merchandise Marks Act. The indictment drawn charged the accused with selling goods to which a false trade description was applied, and it was said that on September 14, 1931, he sold 1 cwt. 22 lb. of pigment, to which a false trade description was applied. The Merchandise Marks Act was an Act that was passed to protect purchasers from buying an article which was not what it purported to be. The question that had to be decided was that of "white lead." It was said to be a custom of the paint trade that white lead meant a basic or hydroxy carbonate of lead. In fact the article which was sold by the defendant was found to be upon analysis a basic sulphate of lead. Evidence would be called before the jury to show that white lead was a basic carbonate of lead. In 1925 a committee was set up for the purpose of producing a specification of white lead, and in March, 1926, they published a leaflet regarding it. According to this particular specification, white lead consisted of genuine dry white lead and genuine refined linseed oil, and dry white lead was set down to be a hydroxy carbonate of lead. The defendant was the sole representative in the United Kingdom of a German firm who had a white lead factory. His offices were Commercial Chambers, Princes Dock Side, Hull. He published an advertisement or a leaflet concerning "Sulfo White Lead." That explained the method of manufacture, etc. When the jury went through that leaflet they would appreciate the mischief of it. Although a person thought he was purchasing white lead from the defendant he was doing nothing of the kind.

Results of Chemical Analysis

Mr. H. D. W. Menear, a builder and decorator, of 11 Billiter Square, London, E.C.3., in evidence, said that on September 2 he had ordered a 1 cwt. cask of "sulfo white lead" which he paid for. The top of the cask was stamped "Sulfo white lead" and "Foreign." On September 17 witness took a sample tin from the cask, which in due course he handed to Mr. L. C. Nickolls, at the Government Laboratory, Clements Inn. From his experience of the trade he would say that white lead was a substance consisting wholly of carbonate of lead apart from the oil which was merely the vehicle to make it into a paste form and was quite a small percentage of the whole. In reply to further questions, witness agreed that he had been in communication with the Board of Trade and was acting under their instructions.

Mr. L. C. Nickolls, a chemist employed in the Government Laboratory at Clements Inn, in evidence said that on September 17 last Mr. Menear handed him a tin which he analysed.

Mr. Roberts: What did the contents consist of?

Witness: 92 per cent. of dry pigments, and 8 per cent. oil. I found 73.88 per cent. lead sulphate, 25.51 per cent. lead oxide, 0.58 per cent. zinc oxide and 0.03 per cent. iron oxide.

Mr. Roberts: How do you describe the contents of the tin?

Witness: The pigment was a basic sulphate of lead.

Mr. C. A. Klein, technical manager of the Associated Lead Manufacturers, Ltd., in evidence, said he was intimately connected with the manufacture of white lead and white lead paint. Sulphate of lead was not "white lead" as he knew it, or as the bulk of people in the trade knew it.

Mr. A. R. Rivet, manager to T. & W. Farmiloe, Ltd., of Rochester Row, Westminster, paint manufacturers, said he was definite in his opinion that "white lead" meant "hydroxy carbonate of lead."

The Recorder, in the course of his judgment, said that he considered that the prosecution had altogether failed in the proving of their case, and, turning to the jury, he asked them if they agreed with him. The jury answered that they did.

Mr. Hunecke had made it apparent that he was not selling carbonate, but sulphate. He (the Recorder) was glad to be able to come to that decision, because to come to any other would be to restrain the trade and help to establish a monopoly, the principle of which was abolished at the beginning of the 17th century. A public body, in his opinion, should let the trade fight their own troubles. He considered that Mr. Hunecke had been a very hardly used man, and he ordered that a sum not exceeding £200 should be paid by the prosecutors towards the costs of Mr. Hunecke.

Chemicals Affected by New Duties

List of Products included in Board of Trade Order

CITRIC acid, tartaric acid, cream of tartar, aluminium sulphate, ammonia alum, soda alum, potash alum, ammonium chloride and lithopone are among the articles in the Abnormal Importations (Customs Duties) No. 3 Order which has been issued by the Board of Trade and which imposes as from Saturday, December 19, a duty of 50 per cent. *ad valorem*.

The total quantity of citric acid, tartaric acid and cream of tartar imported during October was 14,600 cwts., and during November 13,000 cwts., while in 1930 the monthly average was 6,200 cwts.; the value of the imports in November was £65,000. The quantity of aluminium sulphate, ammonia alum, soda alum and potash alum imported in October, and also in November, was 3,000 tons, the value in November being £16,000. The monthly average for 1930 was 2,000 tons. For ammonium chloride the imports in 1930 averaged 226 tons per month; in October, 1931, 895 tons were imported, and in November 660 tons, valued at £9,000. Imports of lithopone amounted in October and November to 51,000 cwts. and 69,000 cwts. respectively, the latter figure being double the monthly average for 1930. The value of the imports during November was £62,000.

Arsenical Poisoning at Tin Smelting Works

A FURTHER instance of arsenical poisoning at tin smelting works has occurred at Wilhelmsburg, Germany, where nine workers engaged in the transport of tin waste became ill, and seven died. According to a report issued in Berlin, at the Hauptversammlung der Gesellschaft Deutscher Metallhütten und Bergleute, the source of the poison can be traced to the sprinkling of the waste with water to prevent dust and then storing in a warm place in the plant. The waste contained aluminium in small quantities, probably as aluminium arsenide which, as is well-known, yields arsenic when treated with water. All metallic alloys which contain arsenic and aluminium together should therefore be handled with precaution, and the arsenic content of the air controlled with mercuric chloride paper.

British Industries Fair, 1932

EXHIBITORS in the Chemical Section of the British Industries Fair, 1932, according to a provisional list which has been issued, include:—Aquamellis Engineering Co., Ltd., Imperial Chemical Industries, Ltd., South Metropolitan Gas Co., Potter and Moore, Ltd., Johnson and Sons Mfg. Chemists, Ltd., General Chemical and Pharmaceutical Co., Ltd., T. Morson and Son, Ltd., Willians (Hounslow), Ltd., Spencer Chapman and Messell, Ltd., W. A. Webb and Co., High Speed Steel Alloys, Ltd., Reeves and Son, Ltd., Albright and Wilson, Ltd., A. Boake Roberts and Co., Ltd., Gas Light and Coke Co., Newton Chambers and Co., Ltd., Thomas Tyre and Co., Ltd., British Industrial Solvents, Ltd., Whiffen and Sons, Ltd., Howards and Son, Ltd., Hopkin and Williams, Ltd., May and Baker, Ltd., W. J. Bush and Co., Ltd., and The Association of British Chemical Manufacturers.

Dutch Artificial Silk Dividend

ACCORDING to a message from Amsterdam the second interim dividend due on January 2 on the Preferred shares of Algemeene Kunstzijdr Unie (A.K.U.) will be passed. This company is interested, directly or indirectly, in various rayon manufacturing companies in Europe and America, including Sna Viscosa, British Enka Artificial Silk Co., Associated Rayon Corporation, British Bemberg, Ltd. and British Breda Silk. No dividend has been paid on the Ordinary shares since that for 1928.

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From Week to Week

MR. ALAN E. L. CHORLTON, M.P., has been appointed a director of Trinidad Leaseholds, Ltd.

AFTER A PERIOD OF IDLENESS due to a fire the Dumbreck By-Products Works of William Baird and Co., Ltd., have recommenced work.

MR. FREDERICK GEORGE FARR and Mr. Kingsley Williams have been appointed directors of Bush, Beach and Gent, Ltd., as from December 17. Mr. S. J. C. Mason becomes governing director.

SIR ERIC HAMBRO, the banker, who is financing the development of a new low-temperature carbonisation process, intends to make a tour of the chief mining centres of Great Britain at an early opportunity this year.

MR. H. E. JONES delivered the address at the monthly meeting of the South Wales Section of the Society of Chemical Industries and the Institute of Chemistry, his subject being "Some Aspects of Boiler-feed Water Treatment."

THE BUSINESS OF BERNARD HOLLAND AND CO., in air compressors, vacuum pumps, Diesel engines and locomotives will henceforth be carried on under the style and title of The B. A. Holland Engineering Co., Ltd., of 18 Victoria Street, London, S.W.1.

AN AEROPLANE BUILT OF BRITISH STAINLESS STEEL is to be constructed in this country as a result of the discovery of a special type of Sheffield stainless steel which can be drawn into strips light enough for use in aeroplane wings. Not only the wings and fuselage, but every nut, bolt, rivet, and control cable will be of stainless steel.

A RECENT FIRE at the works of Edward Gorton and Co., Ltd., glue manufacturers, and the Warrington Chemical Drug Co., Woolston, near Warrington, caused damage amounting to £20,000. Tons of manufactured glue in bags as well as stocks of salicylic acid, were involved, and the flames were exceptionally fierce on account of the highly inflammable nature of the material.

RECENT WILLS include:—Mr. Philip Holland, of Gordon Square, London, analytical chemist, formerly in practice in Manchester and public analyst for Southport, £37,010 (net personally £35,417). He bequeathed his laboratory apparatus, microscopes, etc., to the Laboratory at University College, London. Joseph Brown, of Laverockbank, 11 Cadzow Drive, Cambuslang, chemical merchant, of Brown, Gray and Co., Ltd., personal estate in Great Britain £6,106.

DAMAGE TO THE AMOUNT of £20,000 was caused by fire which followed the bursting of a tar tank at the Northumberland whinstone quarries at Barrasford, North Tynedale. The tank, which was the property of the Gateshead Gas Company, was being unloaded when it burst, and the tar, flowing into the boiler house, caught fire. The boiler exploded, and the screens above caught fire and were completely destroyed, together with the electrical machinery which was installed last year.

THE FRENCH NITRATE TRUST, the Comptoir Francais de la Zote, has signed an agreement with the German Stickstoff Syndicate, whereby Germany will supply France during 1932 with nitrogenous fertilisers over and above the nitrates France buys from Chile. The quantity to be provided by Germany is not announced. From the political standpoint this agreement is a step forward on the road to closer Franco-German economic co-operation, and is ushered in under the aegis of the Franco-German Economic Commission which was created during M. Laval's autumn visit to Berlin.

MR. F. S. SINNATT, D.Sc., F.I.C., has been appointed Director of Fuel Research under the Department of Scientific and Industrial Research, in succession to Dr. C. H. Lander, who has left the Department upon his appointment as Professor of Engineering at the Imperial College of Science and Technology, South Kensington. Dr. Sinnatt has been Assistant Director of Fuel Research since 1924. Previously he was lecturer on Fuels in the University of Manchester Faculty of Technology and Director of Research to the Lancashire and Cheshire Coal Research Association.

MR. CLIFFORD M. JONES, M.Sc., of Leeds, has been appointed senior chemistry master at the Wheelwright Grammar School, Dewsbury.

MR. F. E. HAMER, the Editor of *The Chemical Age*, who underwent an operation on November 28, has made such good progress that he was able to leave the Nursing Home prior to Christmas.

AN APPRENTICE ELECTRICIAN, Frank Charlesworth (18), of Barrow, has died in the Barrow Hospital following injuries caused by falling into a tank of caustic soda at the Barrow Paper Works.

THE MEMBERS' LIST of the Institution of Chemical Engineers, corrected to October 21, 1931, has just been published. This list contains a useful appendix showing the names of individual members under the towns in which they reside.

THE CHILEAN GOVERNMENT has initiated new conversations with Soviet Russia on a proposal to exchange nitrate for oil, according to a cable from Santiago. A Bill establishing a petroleum refinery monopoly is expected to pass the Senate next week.

THE NEXT SERIES OF LECTURES and demonstrations on tropical hygiene, which are intended for men and women outside the medical profession proceeding to the Tropics, will be given by Lieut.-Colonel G. E. F. Stammers, M.R.C.S., L.R.C.P., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1., January 11-20.

GENERAL REFRACTORIES, LTD., of Sheffield, who have works in England and Scotland, have purchased the Levenseat sand and fireclay works and quarries at West Calder belonging to J. and T. Thornton, Hermand, West Calder. The sand at these quarries is of high quality suitable for glass-making, furnaces and other purposes.

DR. ARTHUR HARDEN has revised and brought up to date his well-known monograph on Alcoholic Fermentation, which was first published twenty years ago. The scope of this new edition remains the same as in former editions, but it also contains an account of the extensive researches which have been made during the past eight or nine years.

AT A JOINT MEETING of the Boards of Directors and the General Councils of the two Norwegian whaling companies, Globus and Polaris, which recently sued Unilever, Ltd., and others for damages amounting to £447,160 for alleged breach of contracts, it was decided to appeal against the judgment delivered by Mr. Justice Branson in the King's Bench Division of the High Court of Justice on December 7 last, dismissing both actions with costs.

THE LEAGUE OF SCIENCE is now affiliated with the General and Central Chamber of Agriculture, and Mr. W. P. Dreaper will act as its delegate on the Council of that body. The League also supports the programmes of the Rural Reconstruction Association, and the New Education Fellowship. Its list of hon. members will remain open until five thousand have been enrolled. The number of its ordinary members will not exceed one hundred, and a General Council will be elected from this body.

A. S. T. M. TENTATIVE STANDARDS for 1931 has been issued by the American Society for Testing Materials. These standards, numbering 180, cover ferrous and non-ferrous metals; cement, lime, gypsum, concrete, and clay products; preservative coatings and petroleum products; road and paving materials; rubber products; coke, timber, shipping containers, waterproofing and roofing materials, building stone and slate, and miscellaneous materials. The tentative standards are assembled in sequence, determined by the products to which they apply, and reference to them is facilitated by detailed table of contents and an extensive subject index. The volume is available in paper binding at a cost of \$7, from the American Society for Testing Materials, 1315 Spruce St., Philadelphia, Pa., U.S.A.

Obituary

MR. ALEXANDER A. ROBERTSON, of Cressington Park, Liverpool, on December 25, aged 61. Mr. Robertson was formerly associated with the Australian Alum Co., of Runcorn, and for the past two years with Peter Spence and Co., chemical manufacturers, of Farnworth, Widnes.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

- 355,266. ALUMINIUM OXIDE. Victoria Vegyészeti Müvek Részvénnytársaság, 15v Kossuth Lajos, Budapest. International Convention date, January 29, 1930. Bauxite is heated above 600° C. but below the melting point, ground, washed and mixed with a binder such as water glass, linseed oil, or varnish, to form a rust-proof and heat-proof coating composition.
- 355,281. LEAD CARBOXYLATES. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 12, 1930. American root resin or French colophony is condensed with maleic anhydride and the product dissolved in aqueous caustic soda and treated with lead nitrate to obtain the lead salts.
- 355,308. CARBON DIOXIDE. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 14, 1930. Gas containing carbon monoxide, e.g., engine exhaust gas, is completely oxidised by treating with oxygen in the presence of a manganite of a heavy metal, earth metal, or rare earth metal, e.g., of iron, nickel, cobalt, copper, zinc, or cadmium, or a mixture of copper manganite with cobalt oxide, iron hydroxide, or metallic iron, zinc, or aluminium. The catalyst may be obtained by precipitation from a solution containing the metal salt and a manganese salt, and also an oxidising agent.
- 355,503. COLLOIDAL PIGMENTS. Compagnie Lorraine de Charbons pour Electrique, 12 Rue d'Aguesseau, Paris. International Convention date, September 7, 1929. Flocculent pigments, such as lamp black, are deflocculated by treating with a small amount of an aqueous solution of an amphoteric colloid, e.g., 1 per cent. of gelatine which has been treated with acid or alkali according to the nature of the pigment. For carbon pigments, the pH value of the colloid is brought to 8–9, and for pigments dispersed in acid solution the pH value is 4–6. The solvent is then evaporated by heating.
- 355,613. ANTIMONY OXIDE. Antimon Berg und Hüttewerke Akt.-Ges., Banska Bystrica, Czechoslovakia. International Convention date, November 29, 1929. Antimony concentrate is mixed with 20–40 per cent. of "fusible" waste oxide obtained in the process and then oxidised with air, whereby a purer product is obtained.
- 355,637. PHOSPHATE FERTILISERS. Imperial Chemical Industries, Ltd., Millbank, London. International Convention date, January 24, 1931. Phosphate rock is treated with 3–6 parts of nitric acid for each part of phosphoric acid and also sufficient to decompose any impurities. The product containing water-soluble phosphate, calcium nitrate and some free acid, is treated with ammonia to neutralise the free acid and convert some or all of the phosphate to the citrate-soluble form. The calcium nitrate may be converted to ammonium nitrate or sufficient ammonia may be used to yield mono- or di-ammonium phosphate. The ammonia may be gaseous or liquid, and the gases evolved during the acid treatment and containing carbon dioxide, fluorine compounds, and nitrogen oxides may be added to the ammonia. The process is particularly applicable to the treatment of low grade phosphate.
- 355,694. CALCIUM SULPHATE. B. Spence and Sons, Ltd., and S. F. W. Crundall, National Buildings, St. Mary's Parsonage, Manchester. Application date, February 25, 1930. Anhydrous calcium sulphate is obtained by heating the hydrated form below 200° C. and is then converted into a finely divided amorphous form by treating with sulphuric acid of 1.2 specific gravity at 100° C. in sufficient quantity to provide 4.5 grams SO₃ to each 100 grams anhydrous sulphate. The product is then washed and dried, and may be calcined. Alternatively, the dehydrated calcium sulphate may be moistened with cold sulphuric acid of 1.4–1.7 specific gravity, and then washed and dried. The acid is not sufficiently strong to form calcium bisulphate.
- 355,766. PHOSPHORIC ANHYDRIDE; CALCIUM PHOSPHATE. Soc. Anon. Compagnie de Minière du M'Zaita, 13 Rue Notre-Dame-des-Victoires, Paris. International Convention date, March 29, 1929. Iron ore, coke, furnace dross, blast furnace dust, natural phosphates, or other substances containing phosphates, are swelted in a reducing atmosphere in the presence of iron ore, and the products treated in a convertor with a neutral lining to obtain phosphoric anhydride, which is condensed, or converted into mono-calcium phosphate.
- 355,715. AMINES. G. F. Horsley, Norton Hall, The Green, Norton-on-Tees, and Imperial Chemical Industries, Ltd., Millbank, London. Application date, May 27, 1930. Phenols, e.g., tar or tar fractions, are treated with ammonia or primary or secondary aliphatic, alicyclic or aralkyl amines, primary aromatic amines, and secondary aromatic amines which do not contain more than one aryl group attached directly to the nitrogen, at a raised temperature in the presence of chlorides of metals which may form more than one chloride, such as ferric, ferrous, cobalt, manganese, cupric, cuprous, stannous, etc. Examples are given of the treatment of phenol and o-cresol.
- 355,716. DYES. W. W. Groves, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 27, 1930. A 1-amino-4-halogenanthraquinone 2-sulphonic acid or a salt is condensed with a Bz¹-amino-diphenylmethane-2-carboxylic acid or a salt, or a 1-amino-2:4-dihalogen-anthraquinone is condensed with the same diphenyl-methane carboxylic acid and then treated with alkali sulphite to introduce a 2-sulphonic acid group. The products may be further treated with concentrated sulphuric acid to effect ring closure. In one example, 2'-aminodiphenyl-methane-2-carboxylic acid is condensed with sodium 1-amino-4-bromo-anthraquinone-2-sulphonate.
- 355,733. DYES. Imperial Chemical Industries, Ltd., Millbank, London, and R. Brightman, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, May 22, 1930. An aromatic diamine of the formula NH₂.Ar.X.Ar.NH₂ where Ar represents a phenylene nucleus without acidic functions and X represents O, S, S₂, S₃, SO₂, CO, or CH₂, both amino groups being in para position to the grouping X, is tetrazotised and coupled with one molecular part of 1-amino-5-naphthol-7-sulphonic acid in alkaline solution and with one molecular part of salicylic acid or an arylpyrazolone not containing a free amino group. The products dye regenerated cellulose materials, and examples are given.
- 355,857. PURIFYING WAXES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, June 12, 1929. Beeswax or shellac wax is dissolved in aliphatic monohydric alcohols and/or their esters with aliphatic monocarboxylic acids, e.g., ethyl or butyl alcohol, or ethyl acetate, and the solution is treated with decolourising carbon and the solvent recovered by distillation.
- 355,866. SALTS OF FATTY ACIDS. H. D. Elkington, London. From Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij, 30 Carel van Bylandtlaan, The Hague. Application date, June 19, 1930. Olefines such as ethylene are subjected to heat and pressure in the presence of water and alkali metal hydroxides, alkali metal phenolates, naphthenates or other alkali metal or ammonium salts with weak acids, and also a liquid organic substance capable of being hydrogenated or from which oxygen may be eliminated, such as phenols, cresols, naphthenic acids, oleic acids, etc., paraffin oil or ethyl alcohol. Examples are given of the preparation of sodium and potassium acetate. Olefines obtained by cracking or destructive hydrogenation may be used.

355,790. POLYMERISED STYROL. Naugatuck Chemical Co., Elm Street, Naugatuck, Conn., U.S.A. Assignees of O. H. Smith, 1287 Pennington Road, West Englewood, N.J., U.S.A. International Convention date, May 24, 1929.

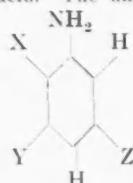
A styrol prepared from chloorethylbenzene is dissolved in ethylbenzene and polymerised by heating to 115°-120° C. in the presence of aqueous caustic soda, ammonia, pyridine or water. A non-brittle polymerised styrol is obtained.

355,807. AMINES. Imperial Chemical Industries, Ltd., Millbank, London. From E. I. Du Pont de Nemours and Co., Wilmington, Del., U.S.A. Application date, June 20, 1930.

Amines are obtained by passing a lower aliphatic alcohol and ammonia over a dehydrating catalyst at a raised temperature. Primary, secondary or tertiary amines are produced as desired by varying the proportion of alcohol to ammonia, and by adding to the mixture a proportion of the undesired amines. For primary amines, ammonia is in excess, and the corresponding secondary and/or tertiary amine is added; for secondary amines, the alcohol is in excess and one or both the undesired amines added. In an example, methylamines are obtained from methyl alcohol and ammonia, with an alumina catalyst obtained by adding a saturated alcoholic solution of aluminium ethylate to ethyl alcohol containing 2 per cent. of water, allowing the mixture to set to a gel, drying at 110° C., and roasting at 500°-600° C.

355,970. DYE INTERMEDIATES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, September 14, 1929.

p-Quinone-oxime-imines and *p*-nitroso amines are obtained by treating certain amines in concentrated sulphuric acid solution with nitrous acid. The amines have the formula



where X is an alkyl group, Y and Z being alkyl and hydrogen, or X and Y together represent a benzene or hydrogenated benzene ring and Z represents hydrogen. The products are the sulphuric acid salts and are decomposed with alkaline agents and may be converted into *p*-diamines by reduction and into quinone-oximes by saponification. Examples are given of the treatment of *p*-xylidine (1:2:5), *o*-xylidine (1:2:3), 1-amino-5:6:7:8-tetrahydro-naphthalene sulphate, and α -naphthylamine.

356,020. PINENE. A. Carpmael, London. From Schering-Kahlbaum Akt.-Ges., 170 Müllerstrasse, Berlin. Application date, October 24, 1930.

Nopinene or oil containing it is heated in the presence of inert porous substances, the activity of which may be increased by treating with water or acids and drying. Pinene is obtained, and examples are given.

356,105. SULPHONATED PHENOL ALDEHYDE CONDENSATION PRODUCTS. W. W. Triggs, London. From Röhm and Haas Co., 222 West Washington Square, Philadelphia, U.S.A. Application date, May 20, 1930.

Phenol is condensed with an aldehyde in the presence of an acid catalyst and then with an unsaturated fatty acid to form a resin which is sulphonated to form a water-soluble tanning, wetting, cleansing and emulsifying agent also suitable as a mordant for basic dyes for leather, a penetrating agent for acid dyes, and a dispersing agent for dyes. The unsaturated fatty acid may contain 10 or more carbon atoms. Examples are given of sulphonated products obtained from phenol, formaldehyde or acetaldehyde and ricinoleic acid, oleic acid or crotonic acid, various sulphonating agents being used.

356,107. STYROL AND CHLORETHYLBENZENE. L. Mellersh-Jackson, London. From Naugatuck Chemical Co., Elm Street, Naugatuck, Conn., U.S.A. Application date, May 21, 1930.

Ethylbenzene is treated with chlorine at 70°-120° C. and the

chloorethylbenzene is fractionated to drive off unchanged ethylbenzene. The residue is heated with pyridine to 100°-230° C., and styrol suitable for direct polymerisation is recovered from the product. A detailed description of the process is given.

356,131. AMINES. Silesia Verein Chemischer Fabriken, Idau und Marienhütte, near Saarau, Kreis Schweidnitz, Germany. International Convention date, June 8, 1929.

The crude xylidine mixture from the nitration of xylene is dissolved in an anhydrous solvent such as benzene or ether, and treated with dry hydrogen chloride to obtain As-m-xylidine.

356,141. SYNTHETIC RESINS. American Cyanamid Co., 535 5th Avenue, New York. International Convention date, June 6, 1929.

A polybasic acid such as phthalic, succinic, malic, or maleic acid is heated with a polyhydric alcohol such as a polyglycerol, pentaerythritol, a glycol such as diethylene glycol, ethylene glycol or propylene glycol in the presence of the fatty acids of cocoanut oil and stearic and/or palmitic acid to obtain a resin.

Specifications Accepted with Date of Application

362,354. Valuable products from carbonaceous materials, Manufacture of. H. L. Elkington. (Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij). August 25, 1930.

362,360. Concentration by froth flotation. Minerals Separation, Ltd. September 4, 1929.

362,432. Nitrogenous vat dyestuffs, Manufacture of. A. Carpmael. (I. G. Farbenindustrie Akt.-Ges.). September 2, 1930. Addition to 16902/30.

362,441. Anthraquinone derivatives, Manufacture of. Imperial Chemical Industries, Ltd., R. F. Thomson, and W. W. Tatum, July 29, 1930.

362,449. Vat dyestuffs of the benzanthrone series, Manufacture of. A. Carpmael. (I. G. Farbenindustrie Akt.-Ges.). September 2, 1930.

362,457. Hydrogenation of mesityl oxide. British Industrial Solvents, Ltd. (Deutsche Gold-und Silber-Scheideanstalt vorm. Roessler). September 4, 1930.

362,458. Condensation products of aldehydes, Manufacture of, and catalysts for use in such manufacture. British Industrial Solvents, Ltd. (Deutsche Gold-und Silber-Scheideanstalt vorm. Roessler). September 4, 1930.

362,482. Intermediate products and dyestuffs of the 1:2-benzanthraquinone series, Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). August 28, 1930.

362,495. Valuable lubricating oils, Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). September 7, 1929.

362,513. Azo dyestuffs, Manufacture of. I. G. Farbenindustrie Akt.-Ges. September 7, 1929.

362,548. Solutions used in dyeing. Imperial Chemical Industries, Ltd., R. F. Goldstein and A. Y. Livingstone. September 19, 1930.

362,564. Powder from iron or iron alloys, Manufacture of Hartstoff-Metall Akt.-Ges. (Hametag). September 29, 1929. Addition to 340,762.

362,579. Persulphuric acid or its salts, Manufacture of, by electrolysis. Österreichische Chemische Werke Ges. February 20, 1930.

362,591. Low-temperature distillation of coal, cannel-coal, and like fuels. H. Steven. October 5, 1929.

362,595. Fertilizers containing a high percentage of nitrogen, Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). October 8, 1930.

362,593. Ethers, Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). October 13, 1930.

362,666. Cracking hydrocarbon oils, Method of. Standard Oil Development Co. December 6, 1929.

362,669. Sulphurated hydrogen from gases, Extraction of. Ges für Kohletechnik. December 20, 1939.

362,683. Lead alloys. H. C. Lancaster, W. T. Butcher, and Goodlass Wall and Lead Industries, Ltd. December 16, 1930.

362,696. Condensation products of the benzanthrone series, and dyestuffs therefrom, Manufacture of. I. G. Farbenindustrie Akt.-Ges. December 22, 1930. Addition to 308,691.

362,700. Steel. Manufacture of. Vereinigte Stahlwerke Akt.-Ges. January 23, 1930. Addition to 307,492.

362,786. Viscose and viscose bodies, Manufacture of. I. G. Farbenindustrie Akt.-Ges. March 1, 1930.

362,805. Desulphurization plant for use in the manufacture of gas. Dr. M. Klonne and M. Klonne (trading as A. Klonne, firm of). May 26, 1930.

362,812. Zinc white, Manufacture of, and apparatus thereof. V. Szidon. December 18, 1930.

362,817. Chlorbenzene, Manufacture of. F. Raschig Ges. April 12, 1930.

- 362,823. Steel and iron and steel alloys, Production of. C. E. Every-Clayton, F. Krupp Akt.-Ges. April 27, 1931.
- 362,835. Metallic magnesium, Production of, by electrothermic reduction of magnesium compounds. Oesterreichisch Amerikanische Magnesit Akt.-Ges. August 4, 1930.
- 362,851. Readily soluble non-dyeing thio derivatives of phenols. I. G. Farbenindustrie Akt.-Ges. September 6, 1929.
- 362,845. Polymerization products from oils and fats, Manufacture of. I. G. Farbenindustrie Akt.-Ges. August 16, 1929.
- 362,852. Organic arsenic compounds, Manufacture of. E. Walton. September 3, 1930.
- 362,861. Cyanide solutions, Recovery of values from. H. T. Durant, H. L. Sulman and H. F. K. Picard. September 8, 1930.
- 362,862. Vulcanization of rubber. Rubber Service Laboratories Co., September 14, 1929.
- 362,900. Alloy steels. Heppenstall Co. June 12, 1930.
- 362,906. Derivatives of naphthalene—1:4:5:8-tetracarboxylic acid, Manufacture of. W. W. Groves. (I. G. Farbenindustrie Akt.-Ges.). September 8, 1930.
- 362,907. Age-resisting rubber compounds, and a process of making the same. Rubber Service Laboratories Co. September 19, 1929.
- 362,908. Nitric acid, Production of. E. Collett. September 8, 1930.
- 362,927. Ore concentration. Minerals Separation, Ltd. September 10, 1929.
- 361,961. Froth flotation, Recovery of minerals or metal values by means of. R. J. Lemmon and Imperial Chemical Industries, Ltd. September 3, 1930.
- 362,964. Purification of vegetable or animal oils or fats. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). September 8, 1930.
- 362,965. Derivatives of the 1:2-benzanthraquinone series, Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). September 8, 1930.
- 362,967. Heat treatment of hydrocarbon oils in the presence of hydrogen. C. J. Frankforter. September 9, 1930.
- 362,971. Derivatives of oxidised oils or fatty acids, Production of and sulphonated products therefrom. Imperial Chemical Industries, Ltd., A. J. Hailwood, and R. P. McGlynn. September 10, 1930.
- 362,987. Azo dyestuffs, Manufacture of. A. Carpmael. (I. G. Farbenindustrie Akt.-Ges.). September 12, 1930.
- 363,009. Acetylene and vinyl chloride from ethylene dichloride, Production of. J. P. Baxter, W. A. M. Edwards, R. M. Winter, and Imperial Chemical Industries, Ltd. September 10, 1930.
- 363,027. Anthraquinone derivatives, Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). October 8, 1930.
- 363,028. Exothermic chemical reactions with hydrocarbons, Process and apparatus for. Naamloose Vennootschap de Bataafse Petroleum Maatschappij. November 4, 1929.
- 363,029. Artificial materials from polyvalent alcohols and polybasic acids or their anhydrides, Manufacture of. Schering Kahlbaum Akt.-Ges. October 22, 1929.
- 363,040. Destructive hydrogenation of coal. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). October 16, 1930.
- 363,044. 1:4:5:8-naphthalene tetracarboxylic acid and derivatives thereof, Manufacture of. I. G. Farbenindustrie Akt.-Ges. October 17, 1929.
- 363,051. Cracking of hydrocarbons. U. A. R. Dudley. October 23, 1930.
- 363,054. Electrolytic process for the manufacture of chemical compounds. A. L. Clariana. January 24, 1930.
- 363,069. Oxidation products of trichlorethylene, Manufacture of. Consortium für Elektro-Chemische Industrie Ges. December 7, 1929.
- 363,105. Destructive hydrogenation of coals. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). November 21, 1930.
- 363,122. Froth-flotation concentration of minerals. Minerals Separation, Ltd., and S. Tucker. December 6, 1930.
- 363,146. Metals from metal carbonyls, Manufacture of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). December 24, 1930.
- 363,149. Sodium cyanide, Manufacture of. A. Mentzel. January 3, 1930.
- 363,189. Metallic barium in closed vessels, Production of. Egysult Izzolampa es Villa-Mossagi Reszvenytarsasag. January 24, 1930.
- 363,205. Sulphuric acid from waste acids produced in the refining of mineral or tar oils, Recovery of. J. Y. Johnson. (I. G. Farbenindustrie Akt.-Ges.). January 31, 1931.
- 363,215. Sulphates, Production of. Metallges Akt.-Ges., C. B. Von Girselwald and E. Stahl. February 10, 1931. Addition to 350,050.
- 363,218. Sal-ammoniac and soda, Manufacture of. A. Jacob. February 13, 1931.
- 363,299. Burning barium carbonate to oxide, Method of. E. L. Rinman. July 25, 1931.
- 363,300. Decomposing ammonia, Method of and apparatus for. Dupont Ammonia Corporation. August 1, 1930.

Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

- Antonoff, G. Manufacture of pure carbon. 35716. December 24. Beryllium Development Corporation. Treatment alloys. 34755. December 15. (United States, January 27.) Böhme Akt.-Ges., H. T. Process for reduction of carboxylic acids &c. 35000. December 17. (Germany, January 17.) Boot's Pure Drug Co., Ltd., Levene, H. H. L., and Pyman, F. L. Production of derivatives of alkaloids containing methoxy groups. 35200. December 19. Chaplin, R. S., Gas Light and Coke Co., and Griffith, R. H. Reactivation of active carbon. 35386. December 22. Chemische Fabrik vorm. Sandoz. Dyeing artificial silks. 34861. December 16. (Germany, December 16, '30.) Clark, T. W. F., and Schindelmeiser, J. Manufacture of butyl alcohol. 34932. December 17. Dreyfus, H. Manufacture &c. of organic compounds. 35368. December 22. — Manufacture of oxygenated organic compounds. 35360. December 22. — Manufacture of aliphatic compounds. 35370. December 22. — Manufacture of organic oxy compounds. 35373. December 22. Freedland, J. Manufacture of pure carbon. 35716. December 24. Horton, L., King, J. G., and Williams, F. A. Destructive hydrogenation of coal &c. 35268. December 21. Hough, A. Manufacture of organic nitrates. 34738. December 15. I. G. Farbenindustrie Akt.-Ges. Manufacture of condensation products. 34730. December 15. (Germany, December 27, '30.) — Making aqueous fibroin solutions. 34992. December 17. (Germany, February 2.) — Manufacture of vat dyestuffs. 34904. December 17. (Germany, December 27, '30.) — Photographic materials. (35112. December 18. (Germany, January 22.) — Manufacture of pyridine derivatives. 35122. December 18. (Germany, December 20, '30.) Imperial Chemical Industries, Ltd. Dyestuffs &c. 34668. December 14. — Priming compositions. 34660. December 14. — Roasting sulphide ores. 34770. December 15. — (Roessler and Hasslacher Chemical Co.). Tinplating. 34666. 34667. December 14. International Hydrogenation Patents, Ltd. Production of hydrocarbon products. 34935. December 17. (Holland, December 18, '30.) Johnson, J. Y. (I. G. Farbenindustrie Akt.-Ges.) Manufacture of fast dyes. 34603. December 14. — Johnson, J. Y. Manufacture of sulphur dioxide. 35106. December 18. — Johnson, J. Y. Manufacture of dyestuffs containing nitrogen. 35552. December 23. — Johnson, J. Y. Manufacture of azo dyestuffs containing metals. 35714. December 24. — Manufacture of bis-(halogenhydroxyaryl)-oxides. 35460. December 22. (Germany, December 23, '30.) — Manufacture of aromatic amines and coloured pigments. 35470. December 22. (Germany, December 24, '30.) — Hydrocarbon conversion products. 35616. December 23. (Germany, December 23, '30.) Loese, L. F. W. Recovery of lead from sulphide ores. 35010. December 17. Naamloose Vennootschap de Bataafse Petroleum Maatschappij. Production of xanthates. 34627. December 14. — Purifying phosphatic liquids. 34758. December 15. (Holland, December 23, '30.) — Manufacture of refined light hydrocarbon oils. 34880. December 16. (United States, December 27, '30.) — Thermal conversion of hydrocarbons. 35176, 35177. December 10. (United States, July 14.) Parkes, D. W., and Robinson Bros., Ltd. Manufacture of piperidine. 35607. December 24. Permutit Akt.-Ges., and United Water Softeners, Ltd. Removal of silicic acid from water. 35720. December 24. — Production of gels. 35721. December 24. Picard, H. F. K. and Gulman, H. L. Recovery of hydrocyanic acid from complex cyanides &c. 35147. December 18. Ratner, L. G. Manufacture of ortho-alkoxy phenolic compounds from methylene ethers of ortho-dioxy aromatic compounds. 35189. December 19. Ziegler, K. Alkylation of acid nitriles. 34661. December 14. (Germany, December 18, '30.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID, ACETIC, 40% TECH.—£18 15s. per ton d/d address U.K. in casks.
 ACID CHROMIC.—11d. per lb., less 2½% d/d U.K.
 ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. carboy d/d, according to purity, strength and locality.
 ACID NITRIC, 80° Tw.—Spot, £20 to £25 per ton makers' works, according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude acid, 6os. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 AMMONIA (ANHYDROUS).—Spot, 10d. per lb., d/d in cylinders.
 AMMONIUM BICHROMATE.—8d. per lb., d/d U.K.
 BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.
 BLEACHING POWDER, 35/37%.—Spot, £7 19s. per ton d/d station in casks, special terms for contracts.
 BORAX, COMMERCIAL.—Granulated, £15 10s. per ton; powder, £17 per ton. (Packed in 1 cwt. bags, carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards.)
 CALCIUM CHLORIDE (SOLID), 70/75%.—Spot, £4 15s. to £5 5s. per ton d/d station in drums.
 CHROMIUM OXIDE.—9½d. to 10d. per lb. according to quantity d/d U.K.
 CHROMETAN.—Crystals, 5½d. per lb. Liquor, £10 per ton d/d U.K.
 METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 8d. to 2s. 3d. per gall.; pyridinised industrial, 1s. 10d. to 2s. 5d. per gall.; mineralised, 2s. 9d. to 3s. 3d. per gall. 64 O.P., 1d. extra in all cases. Prices according to quantity.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—4½d. per lb. net d/d U.K., discount according to quantity; ground 5½d. per lb.
 POTASSIUM CHLORATE.—3½d. per lb. ex-wharf, London, in cwt. kegs.
 POTASSIUM CHROMATE.—5½d. per lb. d/d U.K.
 SALAMMONIAC.—First Imp, spot, £40 17s. 6d. per ton d/d address in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.
 SALT CAKE, UNGROUND.—Spot, £3 10s. per ton d/d station in bulk.
 SODA ASH, 58%.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.
 SODA CAUSTIC, SOLID, 76/77° E.—Spot, £14 10s. per ton, d/d station.
 SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2-cwt. bags.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.
 SODIUM BICHROMATE CRYSTALS, CAKE AND POWDER.—3½d. per lb. net d/d U.K., discount according to quantity. Anhydrous 4½d. per lb.
 SODIUM BISULPHITE POWDER, 60/62%.—£16 10s. per ton delivered 1-cwt. iron drums for home trade.
 SODIUM CHLORATE.—2½d. per lb.
 SODIUM CHROMATE.—3½d. per lb. d/d U.K.
 SODIUM NITRITE.—Spot, £19 per ton, d/d station in drums.
 SODIUM PHOSPHATE.—£15 per ton, f.o.r. London, casks free.
 SODIUM SILICATE, 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.
 SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d.
 SODIUM SULPHIDE SOLID, 60/62%.—Spot, £10 5s. per ton, d/d in drums. Crystals—Spot, £8 5s. per ton, d/d in casks.
 SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton; d/d station in kegs. Commercial—Spot, £9 per ton, d/d station in bags.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—5½d. to 6½d. per lb. Crude 60's 1s. 4d. to 1s. 5d. per gall.
 ACID CRESYLIC 99/100.—1s. 8d. to 1s. 9d. per gall. B.P., 2s. 6d. to 3s. per gall. Refined, 2s. to 2s. 2d. per gall. Pale, 98%, 1s. 7d. to 1s. 8d. Dark, 1s. 4d. to 1s. 4½d.
 BENZOLE.—Prices at works: Crude, 7d. to 7½d. per gall.; Standard Motor, 1s. 2d. to 1s. 3d. per gall. 90%—1s. 3d. to 1s. 4d. per gall. Pure, 1s. 6d. to 1s. 7d. per gall.
 TOLCOLE.—90% 2s. 4d. per gall. Pure, 2s. 6d. per gall.
 XYLOL.—2s. per gall. Pure, 2s. 3d. per gall.
 CREOSOTE.—Standard specification, for export, 4½d. to 5d. net per gall. f.o.b. for Home, 3½d. per gall. d/d.
 NAPHTHA.—Solvent, 90/160, 1s. 3d. per gall. Solvent, 95/160, 1s. 5d. to 1s. 6d. per gall. Solvent, 90/190, 11d. to 1s. 2d. per gall.
 NAPHTHALENE.—Purified Crystals, £11 10s. per ton, in bags.
 PITCH.—Medium soft, 70s. per ton, in bulk at makers' works.
 PYRIDINE.—90/140, 3s. 9d. to 4s. per gall. 90/160, 4s. to 4s. 6d. per gall. 90/180, 2s. to 2s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:
 ACID GAMMA.—Spot, 3s. 3d. per lb. 100% d/d buyer's works.
 ACID H.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.
 ACID NAPHTHONIC.—1s. 2d. per lb. 100% d/d buyer's works.
 ACID NEVILLE AND WINTHROP.—Spot, 2s. 6d. per lb. 100% d/d buyer's works.
 ACID SULPHANILIC.—Spot, 8½d. per lb. 100% d/d buyer's works.
 ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.
 ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.
 BENZALDEHYDE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.
 BENZIDINE BASE.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.
 BENZYLIC ACID.—Spot, 30/31° C.—£2 6s. 6d. per cwt., in 1-ton lots.
 m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.
 p-CRESOL 34-5° C.—1s. 9d. per lb., in ton lots.
 DICHLORANILINE.—2s. 5d. per lb.
 DIMETHYLANILINE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.
 DINITROBENZENE.—7½d. per lb.
 DINITROTOLUENE.—48/50° C., 7d. per lb.; 66/68° C., 7½d.-8d. per lb.
 DIPHENYLAMINE.—Spot, 1s. 8d. per lb., d/d buyer's works.
 a-NAPHTHOL.—Spot, 1s. 9d. per lb. d/d buyer's works.
 B-NAPHTHOL.—Spot, £65 per ton in 1-ton lots, d/d buyer's works.
 a-NAPHTHYLAMINE.—Spot, 10½d. per lb. d/d buyer's works.
 B-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.
 o-NITRANILINE.—5s. 11d. per lb.
 m-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.
 p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.
 NITROBENZENE.—Spot, 6½d. per lb.; 5-cwt. lots, drums extra, d/d buyers' works.
 NITRONAPHTHALENE.—8½d. per lb.
 SODIUM NAPHTHIONATE.—Spot, 1s. 6d. per lb. 100% d/d buyer's works.
 o-TOLUIDINE.—Spot, 9½d. per lb., drums extra, d/d buyer's works.
 p-TOLUIDINE.—Spot, 1s. 6d. per lb. d/d buyer's works.
 m-XYLIDINE ACETATE.—3s. 3d. per lb., 100%.

Wood Distillation Products

ACETATE OF LIME.—£7 5s. to £7 10s. per ton. Grey, £12 to £12 5s. per ton. Liquor, 8d. to 9d. per gall.
 ACETIC ACID, TECHNICAL, 40%.—£16 15s. per ton.
 ACETONE.—£63 to £65 per ton.
 AMYL ACETATE, TECHNICAL.—8os. to 9os. per cwt.
 CHARCOAL.—£6 to £10 per ton, according to grade and locality.
 IRON LIQUOR.—24°/30° Tw., 10d. to 1s. 2d. per gall.
 METHYL ACETONE, 40/50%.—£52 per ton.
 RED LIQUOR.—16° Tw., 8½d. to 10d. per gall.
 WOOD CREOSOTE.—1s. to 2s. 6d. per gall., unrefined.
 WOOD NAPHTHA, MISCELL.—3s. to 4s. per gall. Solvent, 3s. 9d. per gall.
 WOOD TAR.—£2 to £6 per ton.
 BROWN SUGAR OF LEAD.—£32 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 1d. per lb., according to quality; Crimson, 1s. 3d. to 1s. 5d. per lb., according to quality.
 ARSENIC SULPHIDE, YELLOW.—1s. 5d. to 1s. 7d. per lb.
 BABYTES.—£7 to £8 10s. per ton, according to quality.
 CADMIUM SULPHIDE.—3s. 6d. to 3s. 9d. per lb.
 CARBON BISULPHIDE.—£26 to £28 per ton, according to quantity; drums extra.
 CARBON, BLACK.—4d. to 5d. per lb., ex wharf.
 CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity drums extra.
 CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
 DIPHENYLGUANIDINE.—2s. 6d. per lb.
 INDIARUBBER SUBSTITUTES, WHITE.—4d. to 5½d. per lb.; Dark, 4d. to 4½d. per lb.
 LAMP BLACK.—£46 to £50 per ton.
 LITHOPONE, 30%.—£20 to £22 per ton.
 SULPHUR.—£12 5s. to £15 15s. per ton.
 MINERAL RUBBER "RUPRON,"—£18 10s.
 PIPERIDINE RUBBER ACCELERATORS.—P.P.D., 10s. 6d. to 11s. 6d. per lb.; Z.P.D., 7s. to 7s. 6d. per lb.; L.P.D., 6s. 6d. to 7s. per lb.; P.T.D., 9s. 8d. to 10s. 4d. per lb.; C.P.D., 8s. 3d. to 8s. 10d. per lb.; S.P.D., 8s. 1d. to 8s. 7d. per lb.; Suparac, Z, 3s. 6d. per lb.; Suparac, Standard, 7s. per lb.; Suparac, Z, 3s. 6d. per lb.
 SULPHUR CHLORIDE.—4d. to 7d. per lb., according to quality.
 SULPHUR PRECIP. B.P.—£55 to £60 per ton, according to quantity.
 SULPHUR PRECIP. COMMERCIAL.—£50 to £55 per ton.
 VERMILLION, PALE OR DEEP.—6s. 11d. to 7s. 1d. per lb.
 ZINC SULPHUR.—10d. to 1s. 1d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, December 29, 1931.

THE holidays have naturally had a restricting influence on the demand, but there is every indication that with the opening of the New Year, a rather larger volume of inquiry will be received. In the meantime markets continue firm with the undertone strong and with a tendency for prices in practically every product to strengthen. There is an active export demand.

General Chemicals

ACETONE.—The market continues firm at £65 to £68 per ton.
ACID, ACETIC.—The market is strong at £37 5s. to £39 5s. for Technical 80%, and £38 5s. to £40 5s. for Pure 80%.
ACID, CITRIC.—Now dutiable to the extent of 50%, the market for imported material is nominal. British material is on offer at about 1s. 2d. per lb., less 5%, with the market very strong.
ACID, FORMIC.—Continues in good request at about £50 10s. to £52 per ton.
ACID, OXALIC.—The market is firm at about £50 per ton in casks and £51 10s. per ton in kegs.
ACID, TARTARIC.—Due to the duty of 50%, the market for imported material is nominal. British material is on offer at about 1s. 1d. per lb. less 5%, with the market very strong.
ALUMINA SULPHATE.—This article is now dutiable to the extent of 50%, and as a result imported material is not on offer. There is a brisk demand for material of British origin on offer at about £8 10s. to £9 10s. per ton.
AMMONIUM CHLORIDE.—Is also dutiable at 50%, and the market for imported material is nominal.
ARSENIC.—Imported material is on offer in rather larger quantities at about £24 per ton c.i.f. main U.K. ports, with Cornish material for forward delivery at about £28 per ton, and the market continues firm.
BARIUM CHLORIDE.—Unchanged at £11 per ton, with business restricted to early delivery.
CREAM OF TARTAR.—Is now dutiable to the extent of 50%, and as a result the market is nominal for imported material.
FORMALDEHYDE.—Continues firm at about £30 per ton.
LEAD ACETATE.—The market for the White Quality is higher at about £43 to £44 per ton, with Brown Quality at £1 per ton less.

Latest Oil Prices

LONDON, December 30.—**LINSEED OIL** was steady. Spot, ex mill, £16 10s.; January £14 5s.; January-April, £14 12s. 6d.; May-August, £16 7s. 6d.; September-December, £17 10s., naked. **RAPE OIL** was quiet. Crude extracted, £30; technical refined, £32, naked ex wharf. **COTTON OIL** was dull. Egyptian crude, £18 10s.; refined common edible, £22 10s.; deodorised, £24 10s., naked, ex mill. **TURPENTINE** was quiet. American, spot, 51s.; January-April, 52s. per cwt.

HULL.—**LINSEED OIL**.—Spot and December, £14 15s.; January at £14 17s. 6d.; January-April at £15; May-August at £16 5s.; and September-December at £17 10s. per ton, naked. **BALTIC**, spot, £24 10s. per ton. **COTTON OIL**.—Bombay, crude, spot, not quoted. Egyptian, crude, spot, £18; edible, refined, spot, £20 10s.; technical, spot, £20 10s.; deodorised, £22 10s. per ton, naked. **PALM KERNEL OIL**.—Crude, f.m.q., spot, £23 10s. per ton, naked. **GROUNDNUT OIL**.—Crushed/extracted, spot, £26; deodorised, £30 per ton. **SOYA OIL**.—Crushed/extracted, spot, £16 10s.; deodorised, £23 per ton. **RAPE OIL**.—Crushed extracted, spot, £29; refined, £31 per ton. **COD OIL**, 15s. 6d. per cwt. **CASTOR OIL**.—Pharmacy, spot, 40s. 6d.; firsts, 41s. 6d.; seconds, 39s. 6d. per cwt. **TURPENTINE**.—American, spot, 53s. per cwt.

Nitrogen Fertilisers

SULPHATE OF AMMONIA.—**Export.**—During the past week the market has been exceptionally quiet. No large business has been reported, and the price remains unchanged at £5 5s. per ton f.o.b. U.K. port in single bags. **Home.**—The prices remain unchanged. A few small purchases have been reported for delivery in the spring, but during this season of the year there is little interest in this product.

IMPORTED NITRATE OF SODA.—The prices remain unchanged, and no movement of stocks or sales have been reported.

BRITISH NITRATE OF SODA.—The prices of this product remain unchanged.

NITRO-CHALK.—It is understood that small bookings have been made at the price of £7 5s. per ton, which has now been in operation for several months.

LITHOPONE.—Also falls under the new duties of 50%, and the market is nominal.

POTASSIUM BICHROMATE.—New prices are now announced for delivery over the first three months of the New Year. This is 5d. per lb., with usual discounts for contracts.

POTASSIUM CHLORATE.—Firm at about £32 to £34 per ton, and in good request.

POTASSIUM PERMANGANATE.—Needle Crystals B.P. firm at 8½d. to 8½d. per lb.

POTASSIUM PRUSSIATE.—Active at about 8½d. per lb.

SODIUM ACETATE.—The market is unchanged at about £23 per ton, and in good request.

SODIUM BICHROMATE.—New prices are now announced for delivery over the first three months of next year. This is 4d. per lb., with usual discounts for contracts.

SODIUM CHLORATE.—In good request at about £30 per ton.

SODIUM HYPOSULPHITE.—The prices for new contracts are now announced, Commercial Quality being £1 per ton higher.

SODIUM NITRATE.—Firm at about £22 to £22 10s. per ton.

SODIUM PRUSSIATE.—Unchanged at 5d. to 5½d. per lb.

SODIUM SULPHIDE.—In good request at the advanced prices.

ZINC SULPHATE.—Steady at about £12 per ton.

Coal Tar Products

THERE is no change in the coal tar products market from last week, and prices remain unaltered.

MOTOR BENZOL.—Obtainable at about 1s. 4d. to 1s. 5d. per gallon f.o.r.

SOLENT NAPHTHA.—Remains at about 1s. 1d. to 1s. 2d. per gallon f.o.r.

HEAVY NAPHTHA.—Quoted at about 11d. to 1s. 0d. per gallon f.o.r.

CREOSOTE OIL.—Unchanged at about 3d. to 3½d. per gallon f.o.r. in the North, and at about 4d. to 4½d. per gallon in London.

CRESYLIC ACID.—Remains at about 1s. 6d. per gallon f.o.r. for the 98, 100% quality, and at about 1s. 4d. per gallon for the Dark Quality, 95, 97%.

NAPHTHALENES.—Quoted at about £2 5s. to £2 10s. per ton for the firelighter quality, at about £2 15s. to £3 per ton for the 74 76 quality, and at about £4 per ton for the 76 78 quality.

PITCH.—Quoted at about 67s. 6d. per ton f.o.b. East Coast port.

South Wales By-Products

THE holidays have drastically curtailed South Wales by-product activities, and it is unlikely that normal trading conditions will be recovered until about the second week of the New Year. The demand for pitch remains unsatisfactory, and the tendency, noted a few weeks ago, for big users to make forward delivery inquiries has fallen off and most of them are again confining their demands to small prompt parcels. There is no change in prices. Road tar has only a moderate call, with quotations unchanged round about 13s. per 40-gallon barrel. Refined tars have a steady, but moderate, call with prices unchanged for coke-oven and gasworks tar. Naphthas are slow, solvent having a small, sporadic call, while heavy has practically no demand. Creosote remains weak, but motor benzol is a fairly bright feature. Patent fuel and coke exports remain unsatisfactory. Patent fuel prices are:—1s. to 1s. 6d. ex-ship Cardiff; 1s. to 1s. 6d. ex-ship Swansea. Coke prices are:—Best foundry, 32s. 6d. to 36s. 6d.; good foundry, 22s. 6d. to 25s.; furnace, 17s. to 18s.

Chemical Research in Bengal

ACCORDING to the Annual Administration Report of the Department of Industries, Bengal, for the year 1930-31, the research work in the Industrial Chemists' Department was mainly concerned with the utilisation of certain indigenous oils such as Punnil oil (*Calophyllum Inophyllum*), Rayna oil (*Amoora Rohituka*), Karanja oil (*Pongamia Glabra*), Kusum oil (*Schleichera Trijuga*), Neem oil (*Melia Azadiachta* or Margosa oil) and Bheranda oil (*Jatropha Curcas*) for industrial purposes. Bulletins for the use of some of the oils in soap-making, etc., have been published. Experiments were also carried out in connection with the manufacture of soap. Demonstration of soap manufacture was conducted in the Kurigram sub-division of Rangpur district and in Malda and Noakhali towns. A number of apprentices were also trained at the Industrial Research Laboratory, and it is interesting to note that some of the apprentices were enabled to take up work in soap factories.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Chas. Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.

Glasgow, December 31, 1931.

A SLIGHT decrease in business has been noted during the past week in the Scottish heavy chemical market due to stock-taking.

ACETONE.—B.G.S.—In good demand quoted £65 to £68 per ton ex wharf, according to quantity.

ACID, ACETIC.—Prices ruling are as follows: glacial, 98/100%, £48 to £59 per ton; pure, 80%, £38 5s. per ton; technical, 80%, £37 5s. delivered in minimum lots of 1 ton.

ACID, BORIC.—Granulated commercial, £25 per ton; crystals, £26 per ton; B.P. crystals, £34 per ton; B.P. powder, £35 per ton, in 1-cwt. bags, delivered Great Britain free in one-ton lots upwards.

ACID, HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearnsenicated quality, 5s. per carboy, ex works, full wagon loads.

ACID, NITRIC, 80° QUALITY.—£23 per ton, ex station, full truck loads.

ACID, OXALIC.—98/100%.—On offer at £42 to £43 per ton, ex store.

ACID, SULPHURIC.—£3 7s. 6d. per ton, ex works, for 144° quality. £5 15s. per ton for 168°. Dearnsenicated quality, 20s. per ton extra.

ACID, TARTARIC, B.P. CRYSTALS.—Quoted 1s. to 1s. 0½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—Quoted round about £8 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted at £9 10s. per ton, c.i.f. U.K. ports. Crystal meal, about 2s. 6d. per ton less.

AMMONIA ANHYDROUS.—Quoted 10½d. per lb., containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton. Powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 80°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station.

ANTIMONY OXIDE.—Spot material obtainable at round about £33 per ton, ex wharf.

ARSENIC, WHITE POWDERED.—Quoted £25 10s. per ton, ex wharf. Spot material still on offer at £26 per ton, ex store.

BARIUM CHLORIDE.—Price about £10 10s. to £11 10s. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 15s. per ton, delivered in minimum 4-ton lots.

CALCIUM CHLORIDE.—British manufacturers' price, £5 5s. to £5 15s. per ton, according to quantity and point of delivery.

COPPERAS, GREEN.—At about £3 15s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Now quoted £29 per ton, ex store.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station.

LEAD, RED.—Price now £30 per ton, delivered buyer's works.

LEAD, WHITE.—Quoted £40 per ton, carriage paid.

LEAD ACETATE.—White crystals quoted round about £35 to £36 per ton c.i.f. U.K. ports. Brown on offer at about £1 per ton less.

MAGNESITE, GROUND CALCINED.—Quoted £9 10s. per ton, ex store.

METHYLATED SPIRIT.—Industrial quality 64 o.p., quoted 2s. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4½d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—96% to 98%. In fair demand. Spot material on offer, £28 per ton ex store.

POTASSIUM CHLORATE.—99/100% Powder.—Quoted £34 per ton ex store; crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £20 17s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 7d. per lb. ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 8d. per lb., ex store.

SODA, CAUSTIC.—Powdered 98/99%, £17 10s. per ton in drums, £18 15s. in casks. Solid 76/77%, £14 10s. per ton in drums, £14 12s. 6d. per ton for 70/72% in drums; all carriage paid buyer's station, minimum four-ton lots; for contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3½d. per lb., delivered buyer's premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 7s. 6d. per ton extra. Light soda ash, £7 13s. per ton, ex quay, minimum four-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 2s. 6d. per ton, ex station, minimum four-ton lots. Pea crystals on offer at £15 per ton, ex station, four-ton lots.

SODIUM NITRATE.—Price not yet fixed.

SODIUM PRUSSIATE.—Quoted 5½d. per lb., ex store. On offer at 5d. per lb., ex wharf to come forward.

SODIUM SULPHATE (SALTCAKE).—Price, 6os. per ton, ex works; 65s. per ton, delivered, for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption: solid 61/62%, £10 per ton; broken, 60/62%, £11 per ton; crystals 30/32%, £8 2s. 6d. per ton, delivered buyer's works on contract, minimum four-ton lots. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £14 per ton; roll, £12 10s. per ton; rock, £11 5s. per ton; ground American, £10 10s. per ton, ex store.

ZINC CHLORIDE 98%.—British material now offered at round about £18 10s. per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Calendars and Diaries Received

We have received the following diaries, calendars and other seasonal reminders from chemical, chemical engineering and other firms:—

Borax Consolidated, Ltd., 16 Eastcheap, London, E.C.3.—A pocket diary printed on blue paper containing a reference to all sports fixtures for 1932.

Kings Patent Agency, Ltd., 146a Queen Victoria Street, London, E.C.4.—A desk diary with three days to the page, and a glossary of commercial phrases included with memoranda.

Foster Instrument Co., Letchworth.—A refill for their magic ring calendar, which was presented last year.

Association of British Chemical Manufacturers, London.—The A.B.C.M. "Who's Who?" for 1932, containing information concerning their members and affiliated Associations.

G. K. S. Combustion Co., Ltd., 11 St. Mary-at-Hill, London, E.C.3.—A pocket diary incorporating over 160 pages of engineering memoranda.

Dexine, Ltd., Stratford.—A wall calendar illustrating the various products of this firm.

United Glass Bottle Manufacturers, Ltd., 40 Norfolk Street, Strand, London, W.C.2.—A desk calendar.

British Oxygen Co., Ltd., London.—A desk calendar and daily reminder, upon each page of which some part of the company's organisation is featured.

Graesser-Monsanto Chemical Works, Ltd., Victoria Station House, London, S.W.1.—A Christmas card.

Sidney Rogerson, Publicity Department, Imperial Chemical Industries, Ltd.—A Christmas card reproduced from one of his own pen and ink sketches featuring John Bull with a depreciated currency in terms of the dollar and franc.

The Chemical Research Laboratory, Teddington.—A Christmas cards bearing seasonal greetings from the Director and Staff.

Staveley Coal and Iron Co., Ltd., near Chesterfield.—A pocket wallet with diary and chemical memoranda.

Industrial and Engineering Chemistry, New York.—A New Year card wishing us continued progress in 1932.

The Clayton Aniline Co., Ltd., Clayton, Manchester.—A calendar reproducing "Sunset in Venice," by Bouvard, which is a picture well adapted for displaying the range of synthetic dyestuffs produced by this company.

Manchester Chemical Market

[FROM OUR OWN CORRESPONDENT.]

Manchester, December 30, 1931.

THE chemical market has opened quietly after the Christmas holiday and business is hardly likely to get back into its stride again until about the beginning of next week. Meanwhile, reports as to contracts booked for delivery over varying periods of the coming year are fairly satisfactory on the whole, and traders, without being too confident as to the general outlook for the near future, are hopeful that the movement of chemicals will be on a better scale than it was in the January-September period of the past year. The price tendency is steady to firm in virtually every section of the market. A feature of the past week has been the issue of the new contract quotations for bichromates over the first three months of 1932.

Heavy Chemicals

Bicarbonate of soda continues to meet with a fair inquiry, and prices of this material are well held at about £10 10s. per ton. Sulphide of sodium has attracted only very moderate attention during the past week; current offers of the 60-62 per cent. concentrated solid quality are at £11 10s. per ton, and of the commercial material at £9 5s. Saltcake is dearer at round £3 2s. 6d. per ton, and a quietly steady trade in this section is being put through. Caustic soda is quoted at from £12 15s. to £14 per ton, in contracts and according to quality, and buying interest is maintained at a fairly satisfactory level. There is a moderate inquiry about in the case of hyposulphite of soda and values are steady at about £15 per ton for the photographic grade and £9 5s. for the commercial. Bichromate of soda is now quoted on the basis of 4d. per lb., less 1 to 3½ per cent., according to quantity, for January-March contracts, and 4d. net for spot parcels. Only a quiet business is passing in phosphate of soda, with the dibasic quality quoted at from £13 to £13 10s. per ton. Prussiate of soda is firm and in fair inquiry at 5d. to 5½d. per lb., according to quantity. Moderate sales are reported in the case of chlorate of soda, with prices about unchanged compared with last report at £30 per ton. A quietly steady business is passing in alkali, offers of which keep up on the basis of £6 per ton.

In the potash section, bichromate meets with a moderate demand at 5d. per lb., less 1 to 3½ per cent. in contracts, and 5d. net for odd lots. Chlorate of potash has been rather quiet at round £34 per ton. With regard to permanganate of potash, the price position of this material is pretty well unchanged at up to 6½d. per lb. for the B.P. grade and about 6½d. for the commercial, with not a great deal of business being reported just now. Caustic potash is steady and in moderate demand at £37 10s. to £38 per ton, as is also carbonate at about £32 per ton. Yellow prussiate of potash continues very firm, with quotations this week in the region of 8½d. per lb.

The demand for arsenic is rather quiet at the moment, but values are about unchanged, with white powdered, Cornish makes, largely nominal at about £26 per ton, at the mines. Sulphate of copper is also inactive but prices are steady at £18 per ton, f.o.b. Business in the acetate of lime during the past week has been confined to relatively small lots, with the grey material obtainable at from £11 15s. per ton and brown at £8. The prices of the lead products are much the same as before, and buying interest at the moment is somewhat restricted; nitrate is on offer at round £29 per ton.

Acids and Tar Products

Tartaric acid meets with a moderate inquiry, with offers at about 1s. 1d. per lb., citric acid being quoted at round 1s. 1½d. per lb. Sales of oxalic acid this week have been on the slow side, but offers are very firm at about £2 10s. per cwt., ex store. Acetic acid is steady and in moderate inquiry at £52 per ton for the technical glacial quality and £39 5s. for the 80 per cent. commercial product.

Pitch for prompt shipment is not too plentiful and from 70s. to 75s. per ton, f.o.b., is being indicated. Creosote oil is on the quiet side at from 3½d. to 4½d. per gallon, naked, at works. Carbolic acid is well held at round 1s. 8d. per gallon, naked, for the 60's crude, and up to 6½d. per lb., f.o.b. for the crystals.

Company News

BRITISH DRUG HOUSES, LTD.—The usual quarterly dividend of 1½ per cent. on the preference shares was payable on December 31.

CAPE ASBESTOS CO.—An interim dividend of 5 per cent. was payable on January 1 on the cumulative participating preference shares.

MAGADI SODA CO.—It is announced that the directors have made a call of 1s. 3d. per share on the preferred ordinary shares, payable January 19. A call of 5s. per share on ordinary shares has been made at the same time.

EINSTEIN'S ELECTROCHEMICAL PROCESS.—The directors have made a call of 3s. per share on the preference shares, payable as to 6d. per share on December 31, 1931, 6d. per share March 31, 1932, 1s. per share June 30, 1932, and 1s. per share September 30, 1932.

EGYPTIAN SALT AND SODA CO.—The report for the year ended August 31, 1931, states that the gross profits, including interest on investments, were £E.46,020 (against £E.54,590), and net profits £E.35,965, to which is added amount brought forward £E.630, making £E.36,595, out of which it is proposed to distribute dividend at 1s. 6d. per share, equal to 7½ per cent. (10 per cent.) of capital £E.36,401, carrying forward £E.194.

TAYLORS DRUG CO.—The report for the year ended October 3, 1931, states that the net profit on trading, including dividend and interest from subsidiary companies, after deducting all management expenses (including managing directors' remuneration) and interest, amounted to £53,135 to which is added amount brought forward £23,228, making £76,363, from which is deducted depreciation on leasehold properties, plant, fixtures and motor vehicles £8,267, income tax and provision therefor £10,641, dividends paid and accrued on preference shares, less tax, £4,561, dividends paid and accrued on "A" preference shares, less tax, £10,642, interim dividend on ordinary shares of 5½ per cent., free of tax, £16,000, leaving £26,252. The directors recommend a final dividend on the ordinary shares of 1 per cent., free of tax, making 6½ per cent., free of tax, for the year, carrying forward £23,252.

New Fireproofing Agents Introduced by I.G.

A RECENT issue of the *Chemiker-Zeitung* directs attention to two new reagents called "intrammon" and "locron," which have been introduced by the I. G. Farbenindustrie for rendering wood and various textile materials fireproof. Intrammon is used for impregnating wood, and is said to be superior to other preparations of the kind, since it can be very uniformly distributed throughout the mass of material when applied under pressure, instead of merely saturating the outer layers. This property is due to an important constituent which the manufacturers call an activator. Intrammon provides a safeguard not only against fire but also against dry-rot and mildew. Locron, on the other hand, is applied to the surface of the material, and is not brittle like preparations containing waterglass. Under the action of radiant heat, locron swells into a voluminous, frothy crust, which acts as an insulating layer, thus protecting the underlying fibres from ignition. It can be applied to textile fibres by means of a spray.

British Tar Products Annual Report

PRESIDING at the Eleventh Annual General Meeting of British Tar Products, Ltd., Mr. A. Woolley Hart, the chairman, said that throughout the year marketing conditions have remained very difficult, particularly in regard to pitch and creosote, the position of which is complicated by the conditions which have obtained in the United States and on the Continent. Other industries, such as the dye and chemical trades, have suffered from the prevailing general trade depression, the falling off in the demand for coke has shortened our supplies of raw material, and this, coupled with the drop in prices realised, has decreased our sales values by approximately £50,000. For the same reason the purchases of raw materials have decreased by £34,653. In spite of these unfavourable factors, however, the amount of profit shown (£40,498) is only £5,916 less than last year.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[NOTE.—*The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

GUISELEY SILICA CO., LTD., Kidderminster. (M., 2/1/32.) Registered December 15, charge, to National Provincial Bank, Ltd., securing all moneys due or to become due to the bank; charged on land and railway siding at Hoo Road, Aggborough, etc. *£1,000. October 2, 1930.

LINCOLN AND MIDLAND COUNTIES DRUG CO., LTD. (M., 2/1/32.) Registered December 17, mortgage, to National Provincial Bank, Ltd., securing all moneys due or to become due to the bank; charged on premises in Mint Lane, Lincoln. *Nil. May 28, 1931.

MAJOR AND CO., LTD., London, chemical manufacturers. (M., 2/1/32.) Registered December 10, mortgage to National Provincial Bank, Ltd., securing all moneys due or to become due to the bank, from Umello, Ltd.; charged on 275a Ley Street, Ilford. *— August 7, 1931.

London Gazette, &c.

Companies Winding Up Voluntarily

ANDRADE NITRATE CO., LTD. (C.W.U.V., 2/1/32.) By a special resolution, December 18. Mr. James Rennie, 145 Dashwood House, Old Broad Street, London, E.C.2, appointed liquidator.

THE DOMINIONS POTASH SUPPLY CO., LTD. (C.W.U.V., 2/1/32.) By special resolution, December 22. Mr. Joseph Geoffrey Randall, 73 Basinghall Street, E.C.2, appointed liquidator.

HICKSON AND PARTNERS, LTD. (C.W.U.V., 2/1/32.) Creditors' claims to John William Gordon Butterfield, 2 Darley Street, Bradford, by January 31.

Chemical Trade Inquiries

These inquiries, abstracted from the "Boar of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country) except where otherwise stated.

SOUTH AFRICA.—The South African Railways and Harbours Administration is calling for tenders (No. 1994), to be presented in Johannesburg by February 15, for the supply of 360 tons of creosote. (Ref. F.X. 1370.)

FRANCE.—An agent established at Lyons wishes to obtain the representation of United Kingdom manufacturers of chemical products for dye works and other industries. (Ref. No. 742).

New Chemical Trade Marks

These lists are specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52 Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to January 2, 1932.

Opposition to the Registration of the following Trade Marks can be lodged up to January 23, 1932.

FELZO BRAND.

527,121. Class 1.—Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. A. G. Turney Engineering Co., Ltd., proprietors of The Felling Zinc Oxide Co., Tyne Street, Felling Shore,

Felling-on-Tyne, county Durham; manufacturers of zinc oxide. November 13, 1931.

CALDURÖ.

527,350. Class 1.—Paints, varnishes, enamels (in the nature of paint), colours, distempers, japans, lacquers, paint and varnish driers, wood preservatives, wood stains, anti-corrosive and anti-fouling compositions, and anti-corrosive oils. The Silicate Paint Co. (J. B. Orr and Co.), Ltd., Riverside Works, River Bank, Charlton, Kent; and 46 Cannon Street, London, E.C.4; manufacturers. November 24, 1931.

AQUAMAT.

527,357. Class 1.—Paints, varnishes, enamels (in the nature of paint), colours, distempers, japans, lacquers, paint and varnish driers, wood preservatives, wood stains, anti-corrosive and anti-fouling compositions, and anti-corrosive oils. The Silicate Paint Co. (J. B. Orr and Co.) Ltd., Riverside Works, River Bank, Charlton, Kent; and 46 Cannon Street, London, E.C.4; manufacturers. November 24, 1931.

UKLOR.

527,501. Class 2.—Chemical substances used for agricultural, horticultural, veterinary, and sanitary purposes. W. A. Wayland and Co., Ltd., U.K. Works, Gosterswood Street, Deptford, London, S.E.8; manufacturing chemists. December 1, 1931.

VEROXINOL.

527,473. Class 3.—Chemical substances prepared for use in medicine and pharmacy. W. Mallard and Co., Ltd., 45 Mallard St., Hackney Wick, London, E.9; manufacturing chemists. November 28, 1931.

Tariff Changes

POLAND.—The Commercial Secretary to H.M. Embassy at Warsaw reports that, by virtue of an Order dated November 9 and effective as from December 1, the export duty on linseed and rape-seed oilcake exported from Poland has been abolished.

UNITED STATES.—The duty on crude feldspar has been reduced from \$1 to 50 cents per ton.

BULGARIA.—A Law, published in the Bulgarian Official Gazette on November 25, which amends, *inter alia*, Article 3 of the Bulgarian Customs Law. This Article formerly provided that all goods nominally free of import duty (i.e., chiefly those raw materials or semi-manufactured goods specially exempted under the Law for the Encouragement of Local Industry) should in fact pay a tax of 3 per cent. *ad valorem* on importation. The Article, as amended, provides for the alteration of this rate as follows:—

At 20 per cent. *ad valorem*:—Tartaric acid; gypsum, milled or not; volatile and aromatic oils; aromatic preparations (esters, essences, etc.); paraffin wax; calcium tartrate; paper pulp and waste; milk powder.

At 15 per cent. *ad valorem*:—Beeswax; raw rubber; artificial wool.

At 12 per cent. *ad valorem*:—Mineral colours.

At 10 per cent. *ad valorem*:—Dyes, aniline and indigo; calcium carbide; organic nitrogenous substances for explosives; tin and tin alloys.

SOUTH AFRICA:—The imposition of "exchange" dumping duties on certain goods imported into the Union of South Africa from countries whose currencies are depreciated in relation to Union Currency, now applies to:—Candles; oils; vegetable or animal, not elsewhere enumerated; paints and colours, excluding artists' colours and dried pigments; soap, soap powder and extracts; tallow; sheep tallow and other, including vegetable tallow and oleine; waxes and greases; beeswax and others; acetate of lead; glycerine (distilled); nitrate of lead, in bulk; sodium carbonate, including soda crystals (washing soda); arsenate of soda (solid).

"C.A." Query

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

172. (*Sprayer*).—An inquirer is anxious to get in touch with the makers or agents of the "Monarch" sprayer. This is believed to be made of antimony and has a porcelain interior.

